

THE MOTOR AGE

THE AUTOMOBILE AUTHORITY.

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Price 5 Cents

CHICAGO NOV. 7, 1901

Vol. V. No. 9

Packards

Are built for combined *reliability* and *speed* over any roads. Ask the man who owns one. Our machines can and do *prove their efficiency* in every detail. Descriptive catalogue free. :: ::
We shall exhibit at the New York show. :: :: ::

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For Steam Vehicles

Improved—Perfect in Every Way



Drip cup unnecessary in starting—Aluminum case over generator—All connections on the outside—Strongly made—Easily adjusted—No flaring or flashing in lighting, even in strong wind. A quick and powerful generator—Main fire valve controlled at seat—Small and neat in appearance and adapted for any machine.

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Stearns

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- Model C Delivery Wagon.
- Model D Buggy Top.
- Model E Victoria Top.
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- Model G Touring Car.
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SYRACUSE, N. Y.



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Simple Efficient and Reliable

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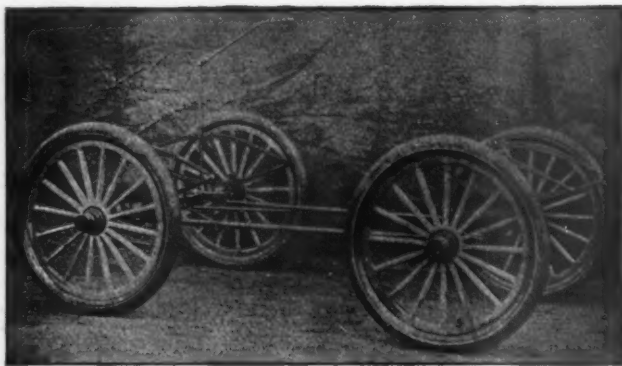
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Agent for Great Britain: John L. Sardy, Saracen Chambers, Snow Hill, London, E. C.

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Get a running gear that is past the experimental stage and build a **SUCCESSFUL AUTOMOBILE**

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OUR SPRING BLOCK BEARING IS SELF-ADJUSTING

and you ought to have it. It is made for revolving axles and is pivoted between the bearing and spring block, enabling the bearing to move free and easy with the axle always. Our catalogue tells all about it.

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Pointer No. 6

FROM THE CHICAGO
AUTOMOBILE EXHIBIT

THE MILWAUKEE AUTOMOBILE COMPANY exhibited: The **largest** steam vehicle
—The thirty-five horse power truck. The **fastest** steam vehicle
—the mile-a-minute racer. ::
The **only** steam delivery cart—
800 to 1000 lbs load capacity.
The **largest** number of steam vehicles—Eleven, no two alike. ::

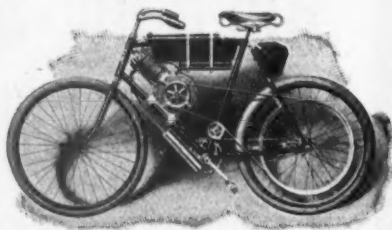
"The Milwaukee" has an air pump working on the cross-head of the engine. It maintains the required air pressure at all times, and unless you are anxious to work up your muscle with a hand pump, you will before buying any other steam carriage, inquire about this, of the

MILWAUKEE AUTOMOBILE CO.

19th St. & St. Paul Ave., MILWAUKEE, WIS.

THE FLYING-MACHINE

Of the 20th Century



IS THE

Mitchell
Motorcycle

Workmanship and finish of the highest grade obtainable. Forks, rims and tires built extra strong and adapted to hard and constant usage. Every Mitchell machine goes out under a positive guarantee. Send for our catalogue and learn all about it.

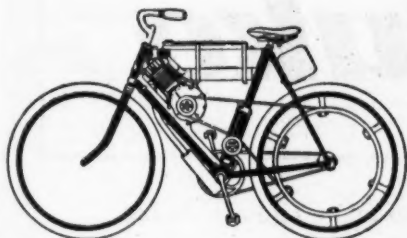
WISCONSIN WHEEL WORKS,

Dept. M Racine Junction,

Wisconsin

The Sun Never Sets on the

AUTO-BI



Go to any country you will in this world—Go through the United States and Canada—Go to Mexico, Yucatan, Cuba, Porto Rica, Bermuda, Trinidad, Hawaiian Islands, Great Britain, Netherlands, Holland, Russia, Germany, France, So. Africa, India, Japan, China, Java, Strait Settlement, New Zealand—all of the Australias—travel in any of these countries and you will find the **AUTO-BI**.

When you are asked for the best Motor Bicycle you know what to reply. The above is some of the evidence.

AUTO-BI COMPANY,

106 Broadway, - - - Buffalo, N. Y.

We Use Thomas Motors Exclusively.

**STAR, RECORD,
BRIDGEPORT**

Pedals

Special Announcement. 1902

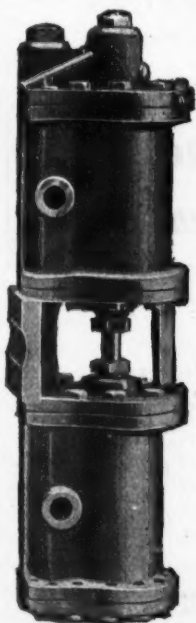
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Send for quotations. :: ::



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Implement Co.**

313-317 Broadway, NEW YORK



Victor Steam Air AND Steam Water Pumps

Space required in carriage 9 inches in height by 3 inches in width. Weight $4\frac{1}{2}$ pounds each. Steam pistons $1\frac{1}{2}$ inches in diameter by 2-inch stroke. Water pump piston $\frac{1}{2}$ inch in diameter by 2-inch stroke. Capacity of water pump $1\frac{1}{2}$ gallons of water per minute against 200 pounds boiler pressure. Air pump piston $1\frac{1}{2}$ inches in diameter by 2-inch stroke. Capacity of air pump 80 pounds pressure on fuel tanks or tires. Pipe connections $\frac{1}{8}$ -inch.

OVERMAN AUTOMOBILE COMPANY,

Room 99, 81 Fulton Street, NEW YORK.

A Fluke

May cause a motor vehicle to make a good showing on a single occasion, but when an automobile stands up and wins five days in succession, it most certainly demonstrates the absence of accidental victory. And when four vehicles stand up and win five days in succession, covering each nearly one hundred miles in a day and being awarded the highest honors at the finish, the charge cannot be supported, in the minds of reasonable men, that the triumph was not brought about by intrinsic merit.

Four first awards were given four WHITE steam carriages for their work in the New York to Buffalo Endurance Contest, promoted by the Automobile Club of America, whose official report can be secured from us, free of charge, upon request. Get a copy and draw your own conclusions from its recitals.

White Sewing Machine Co.

(Auto Dept.)

CLEVELAND, OHIO.

...NOTE...

There will be a special exhibit of White steam carriages at the New York branch office of the White Sewing Machine Co., 22 Union Square, where all interested parties are cordially invited to call and inspect the vehicles.

...BRANCHES...

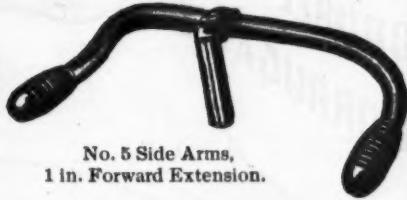
22 Union Square, New York, N.Y. 509 Tremont St., Boston, Mass. 212 Woodward Ave, Detroit, Mich
300 Post Street, San Francisco, Cal. 609 Main Street, Buffalo, N. Y.

1902 Kelly Adjustable **Handle Bars**

STANDARD BARS OF THE WORLD



No. 3 Arms, Regular Stem.



No. 5 Side Arms,
1 in. Forward Extension.



No. 4 Racing Arms,
2½ in Forward Extension

It will pay all manufacturers these times when competition is hot, to see that their wheels are equipped with just the attachments demanded by the rider. Every rider knows the merits of KELLY BARS, as they have been for the past six years the most popular and foremost sundry in the cycle trade.

The Kelly Handle Bar Co. CLEVELAND, O.
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— EVERY —

Geneva Steam Wagon

Is designed to go where any automobile has gone or can go.

Boiler does not scale. Pilot light may burn at all times, maintaining a steady pressure. Fire automatically regulated. Simple marine engine, 27½x4 inches, 6-horse power controlled by throttle valve lever at center of wagon, the same lever also operating a reverse lever. Feed water heater. Power pump for water. Extra heavy wheels; 2½-inch high grade single tube tires. Carries 31 gals. water and 9 gals. gasoline, sufficient for from 40 to 50 miles. Double-acting brake. Every part interchangeable.

It is an automatic automobile in-so-far as an automobile can safely be made so.

Its outline is graceful; its inside is built for business.

**Geneva Automobile &
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GENEVA, OHIO.

ADVERTISEMENTS.

DETACHABLE
DOUBLE TUBE
CORRUGATED

G AND J

FASTEST
EASIEST
SAFEST



G & J TIRE CO.

INDIANAPOLIS, IND.

EXHIBIT AT NEW YORK AUTOMOBILE SHOW-BOOTH 102

ADVERTISEMENTS.

AN AUTOMOBILE WITHOUT A

Veeder Odometer

Is not complete. To keep track of the amount of fuel, water or power consumed it is absolutely essential.

Regular Odometer with Band Bracket Attached to Axle.



Price with bracket complete, \$3.50

Trip Odometer with Band Bracket.



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Various
Other Styles
of Brackets
Furnished....

Send for 12-Page Catalogue.

THE VEEDER MFG. CO., - - Hartford, Conn.

Makers of Odometers, Cyclometers, Counters, Fine Castings.

The Reputation of the

Gasmobile

Is Justified by Actual Demonstration

It has carried off the honors wherever shown. Not alone the best by performance but conceded the handsomest, most graceful, easiest controlled and most reliable American built carriage.

First of gasoline vehicles, Merrick Road, March, 1900.

Blue Ribbon—Long Island Endurance Test, April, 1901.

First prize, Guttenburg, N. J., September, 1900.

Winner of every contest for gasoline vehicles at New York and Philadelphia automobile shows. These contests include starting, stopping and obstacle events.

First prize, Newport, September, 1901.

NEW YORK-BUFFALO ENDURANCE RUN—Two first class certificates.

Silver Cup, Providence, October 18, 1901.

AWARDED GOLD MEDAL, PAN-AMERICAN EXPOSITION

Automobile Company of America, 135 Broadway, NEW YORK.

Factory: Marlon (Jersey City) N. J.

ADVERTISEMENTS.

The Waverley booth at the second annual Automobile Show, Madison Square Garden, New York, will contain a complete line of

Waverley Electric Vehicles

The exhibit will embrace the following vehicles:

Waverley Stanhope, Model 21, Price \$850. Waverley Stanhope, with top, Model 22, Price \$925. Waverley Surrey, Model 20 (A) Price \$1400.

This exhibit will embrace the best and most complete line of electric vehicles ever shown at any exhibition. In construction and finish the highest mechanical and artistic taste has been shown. In mileage capacity they possess a greater radius than any other vehicle. No one interested in possessing a vehicle of known value in construction and running qualities will make any error if they select a Waverley. They live up to their manufacturers' every claim. Send for Waverley Booklet. Free upon application.



AMERICAN BICYCLE COMPANY

New York Branch, 91 Fifth Avenue.

Waverley Automobile Dept.
INDIANAPOLIS, IND.



FOR AUTOMOBILES

NO JOINTS
CREEPING
TROUBLE

Outwears

ALL OTHERS.

WRITE FOR CATALOGUE
AND PRICES

THE GOODYEAR TIRE AND RUBBER CO.

AKRON, OHIO, U. S. A.

LARGEST TIRE MAKERS IN THE WORLD

CURRENT NOTES AND COMMENTS

While out looking for a good stretch of road for a private trial of a mile against time last Wednesday, Henri Fournier and a party of five companions were run down by an engine on the Long Island railroad and all more or less severely injured. The car, a 10-horsepower Mors, was completely demolished. Fournier has since commenced suit against the railroad company for damages of \$50,000. Other suits will probably follow.

The people in the party were Fournier, A. G. Batchelder, chairman of the National Cycling Association and automobile representative of the Journal; J. H. Gerrie, sporting editor of the New York Herald; Arthur Lewis and Henry J. Everall, friends of Fournier, and H. B. Fullerton, ex-chief consul of the New York state division of the League of American Wheelmen and special agent of the passenger department of the Long Island railroad.

Fournier escaped with a slight sprain of one ankle. Batchelder was cut about the head and one ankle was broken. Gerrie was hurt about one leg and a shoulder blade was broken. Fullerton was the principal sufferer, and for a time it was considered doubtful whether he would survive. A fracture of the skull and a broken leg fell to his lot. The other members of the party escaped almost unhurt.

The men had started out to find a spot for a private trial against time, Fournier desiring to make a mile inside of a minute. It was their intention to locate the spot that afternoon and then quietly apply to the authorities for the necessary permission to make a test early in the morning. It had been arranged that there would be no one present but the men who were in the party, W. K. Vanderbilt and two representatives of the MOTOR AGE, who were to have secured pictures of the trial. Mr. Fullerton, who is the man who arranged Murphy's ride behind a Long Island locomotive, in which a mile was covered in 57 seconds, had been pressed into the service because of his intimate knowledge of the roads, and it is probable that the stretch had been selected before the accident oc-

curred, for the party had been accompanied by Mr. Vanderbilt, who had pointed out 3 miles of practically dead level country, Fournier riding with him in his Daimler vehicle. When Mr. Vanderbilt left, Fournier took charge of his own machine and, according to the story told by all of the occupants of the vehicle, was proceeding leisurely along the road. A row of houses prevented him from seeing the track, except directly ahead of him. There were no gates and no watchman. An automatic bell gives warning of the approach of trains, but this either was not in working order or could not be heard by the driver or his friends. When Fournier caught sight of the engine it was within a few feet of him. Realizing instantly that there was no possible hope of escape, he turned the front of the vehicle away from the engine so that the shock came from the rear and side. Various stories are told of the distance the occupants of the vehicle were thrown, but the results above recorded indicate the extreme severity of the blow.

The sufferers were conveyed, on an ambulance car furnished by the railway company, to a hospital at Mineola, L. I., where three of them, Gerrie, Batchelder and Fullerton, still remain and are likely to for some time. They are progressing favorably, however, and Batchelder declares that he is able to do everything but walk.

The latest information is that Batchelder will have to stay in the hospital from 5 to 6 weeks. Gerrie's leg is fractured, but he expects to be able to leave the hospital in 3 weeks. Both declare it a miracle that they were not killed outright.

Owner of the Mors Hurt

Strangely enough, Captain Laycock, the owner of the Mors car on which Fournier won the Paris-Berlin race and on which he made the records at Empire track, was also a sufferer from a severe accident lately. He was driving a 24-horsepower Panhard in England, and had with him two friends and a mechanic. At the bottom of a hill the wheels skidded, struck a bank and overturned the car. The cap-

NOTES AND COMMENTS.

tain suffered a broken collar bone and one of his friends a fractured leg. Captain Laycock is not only the owner of the cars above referred to but five others. He follows the hounds in a motor carriage. He was with Colonel French in South Africa, is a member of the English automobile club and vice president of the Lincolnshire Automobile Club.

Constitution of New Association

Following is a copy of the constitution of the new Ohio association formed at Columbus last week:

ARTICLE I. NAME.

This association shall be known as The Automobile Association.

ARTICLE II. OBJECTS.

The promotion of an organization composed of persons owning self-propelled vehicles for personal or private use. To co-operate in securing rational legislation and the formation of proper rules and regulations governing the use of automobiles in city and country, and to maintain the lawful rights and privileges of owners or users of all forms of self-propelled vehicles, whenever and wherever such rights and privileges are menaced. The encouragement and development in this state of the automobile. To promote and encourage in all ways the construction and maintenance of good roads and the improvement of existing highways, and generally to maintain an association devoted to automobilism.

ARTICLE III. MEMBERSHIP.

The membership shall be composed of persons who are of legal age, owners or users of automobiles in the state of Ohio.

ARTICLE IV. GOVERNMENT.

Section 1. The officers of the club shall consist of a president, vice-president and a secretary, who shall also act as treasurer.

Section 2. The general management and control of the affairs, funds and property of the association shall be vested in an executive board consisting of the president, vice-president, secretary and four other members.

ARTICLE V. AMENDMENTS.

Section 1. The constitution may be amended only by a vote of two-thirds of all members present in person or by proxy at a regular or special meeting called for that purpose.

Section 2. No proposition to amend this

constitution shall be acted upon at any meeting of the association unless it shall have been presented in writing to the secretary, signed by at least five members, and notice embodying the purport of the proposed amendment shall have been sent to each member of the association in the call for such meeting, which notice shall be sent at least one month prior to the date of the proposed meeting.

Duty on Entering Germany

Tourists who contemplate a visit to Europe will do well to recollect the following:

When an automobile is imported into Germany duty has to be paid on it, which will be refunded when the car leaves that country again; and for the purpose of identifying the car, leads are put on it. In Holland permission must be obtained from the Minister of Waterstaat, Handelen, Ny verheid, at The Hague, which will probably necessitate a visit to the place before commencing the journey.

They Do It Better There

A list compiled by Le Velo, of Paris, shows that in July last fifty-three people died from accidents caused by horses, and 613 were injured. Railways were responsible for sixteen deaths and 112 injuries. Cycles accounted for six fatalities and 104 injuries; motor cars for five and fifty-one respectively. In other words, of the fatalities dealt with, 66.25 per cent were due to horses, 20 per cent to railways, 6.25 per cent to motor cars, and 7.50 per cent to cycles. Of the injuries recorded 69.65 per cent were caused by horses, 12.75 per cent by railways, 11.81 per cent by cycles, and 5.79 per cent by motor cars.

Locomobile's London House

American automobiles, generally, are not yet popular on the other side. There are a few electrics in Paris and London, principally those of the Electric Vehicle Co. The one machine which has attained extraordinary popularity over there is the Locomobile. The extent to which it has become popular is demonstrated by the extensive premises which the Locomobile company is completing near South Kensington station where it has taken new premises at 39, 40, 41 and 42 Sussex place, together with a

NOTES AND COMMENTS.

large tract of land at the back, retaining its old premises at 52 in the same street, to meet the requirements of the business which it has so rapidly built up in England. The new show rooms consist of two fine ground floor stores, each 104 feet long by 30 feet wide, with a height of 15 feet, and two basements of similar size for storage, etc.

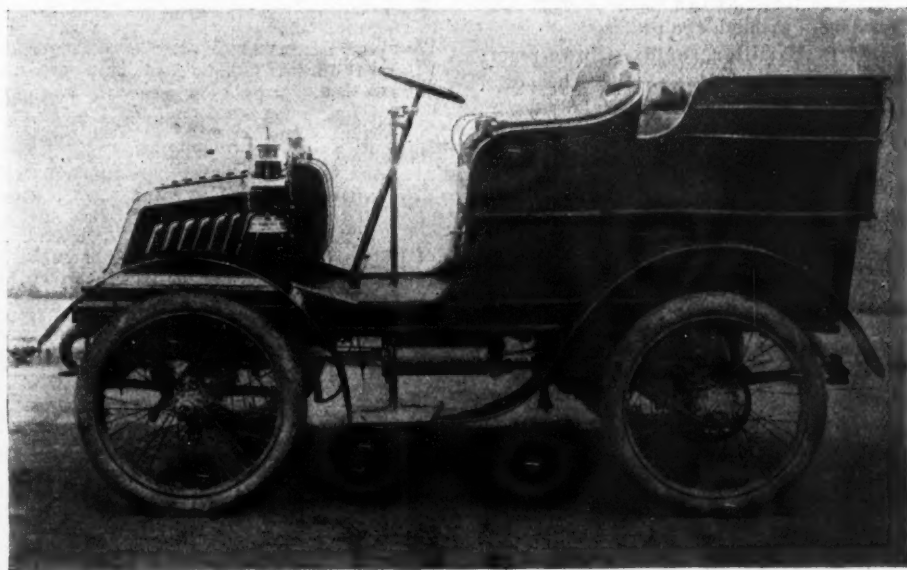
At the back a large building is now in course of erection, consisting of two floors, each 180 feet long by 60 wide, the height from the basement to the peak being 39 feet. This building, where the shipping business is to be handled by direct delivery on to the main floor, is led up to by a wide roadway from the main street, the whole of the cars and parts being delivered direct on to the floor, where they are stored prior to being transferred to the show rooms as required. The basement of this building will be devoted to repairs and the assem-

bling of the parts as they arrive from America. Galleries will also be provided around the main storage room, where additional vehicles and spare parts may be stacked. In addition, branching off the main entrance, is a 12-foot roadway at the back of the premises, leading up to a special storage building, measuring 68 feet by 21 feet, for private owners.

Fisk Company's New Branches

The Fisk Rubber Co. has established branches at Boston and Philadelphia, believing that the demand for high-grade goods of its manufacture is increasing in those districts. The branches will carry complete stocks of tires and other specialties and will be prepared to do all kinds of repairing. The Boston branch will be at 604 Atlantic avenue and will be in charge of G. A. Campbell, lately with the

DE DION COMPANY'S LIGHT CAR FOR 1902



The illustration shows a new light De Dion car for 1902. The most notable change, of course, is the placing of the 8-horsepower motor under a bonnet in the fore part of the frame. The car is provided with two speeds forward and a reverse, the differential and change-speed gear being

contained in a single oil-containing case. Inclined irreversible hand-wheel steering and a powerful band brake on the differential gear drum, in conjunction with which is a device acting on the governor, and so slowing down the engine, are other points of the new vehicle.

NOTES AND COMMENTS.

Columbia sales department of the American Bicycle Co., and associated with him will be E. T. Barton, who for some time past has held a position as foreman of the repair department of the Hartford Rubber Works Co. The Philadelphia branch will be at 916 Arch street and the manager of this will be J. L. Gibney, well known in the rubber business in and about that place.

Tests of the Clarkson Burner

Some time ago reference was made in *MOTOR AGE* to the Clarkson burner, a device made by an English house for application to steam carriages to burn heavy oil. It had been reported that the burner had been tested at the factory of the Locomobile company a year before and had been given up as a hopeless case on account of the odor. Indeed, from the description furnished, it appeared that there was no more likelihood of the device succeeding than of many others devised to burn the heavier grades of oil. Since then it has been tested by a number of users of steam carriages in England who have taken the trouble to make known the details of their experiences through the press.

Dr. I. Hamilton, of Dartford, reports two runs, one of 65 and the other of 85 miles. He had been prepared, he says, for the usual defects of steam cars and had experienced them all, but on the introduction of the new burner they had all been removed. "The radius of the movement," he says, "is very much enlarged."

"The 60-miles' run was done on one charge of oil and water, which works out at a cost of 1 cent per mile. On the 85-miles' run I found my supply of oil failing about 5 miles from home, and had to replenish. Both these runs were through an exceedingly hilly part of Kent. On the level I have no doubt 90 miles could be done on one charge of oil and water. The car is what is known as a No. 2, with water tank capacity of 21 gallons. The power of the car is increased by at least one-half, and there are no hills in this district up which the car could not travel at the rate of 10 miles an hour. There is no back-firing, and by a lever the flame can be reduced from full blast to just being alight without smoking or going out, and the car may be left standing for hours without requiring attention."

Another user, T. F. Hall, who had pre-

viously made a report on a 300-miles' trial, now adds to it one of a run of 500. The following is taken from his report:

"During the whole run I had no breakdown of any sort in either car, engines, or burner, nor did I puncture a tire. The only repairs I made were to a pin in the burner, and one piece of india rubber tubing was renewed. Both faults were discovered and set right before starting on different mornings. Strong winds were blowing almost every day, sometimes amounting to full gales. We had them as head winds and from behind the car, but the burner was never blown out, nor did it once fire back. When, however, the wind played directly on to the burner, behind the car, the fire was distinctly affected, and the speed was consequently less. The oil separator and filter connected with the water recovery apparatus acted splendidly, and I found that the filter cloths need not be changed under 200 miles at least. The air pressure on the small oil supply tank kept up steadily to 30 lbs., to which figure the automatic confined it, and when, during lighting up before starting and occasionally while running, it did drop down to 18 lbs. or 20 lbs., it invariably recovered itself after a mile or two.

"The water supply by means of the condensed steam recovery apparatus was quite efficient, and my previous estimate of half a gallon per mile water consumption was fully justified in any cool weather, or when the wind played on the condenser in front of the car, but on a very hot day, or when the wind came from a direction behind the car, this average was exceeded, though I had always some gallons in the tank when stopping for lunch and on completion of the day's work. I never once ran short of or stopped for want of water, except as previously arranged at lunch time.

"Altogether we ran, more or less, on 11 days, doing 76, 91, 72, 70, etc., miles per day—2 days 47 miles each, and shorter distances while staying at various places. Our total was 490 miles, and we used 44 gallons of petroleum. This oil varied considerably both in price and efficiency. Several times I had to pay 20 cents, and again 18, 16 and 15 cents per gallon. Some 5 or 6 gallons I got at 12 cents. These figures show that we ran $9\frac{1}{4}$ miles on a gallon of oil and at a cost of a shade more than 13-5 cents."

NOTES AND COMMENTS.

In comparing the cost with that attained in America it should be remembered that the cost of oil is from 100 to 200 per cent higher there than in this country.

The Bankers' Extension

The Banker Bros., of Pittsburg, have long been among the most progressive dealers in cycles and automobiles in that part of the country. Some time ago they had erected a building especially designed to meet the requirements of automobilists and their business has grown so satisfactorily that they are regarded as among the most reliable representatives a manufacturer can secure. But according to the reports from their city they will no longer be satisfied to remain dealers only. They have interested with them Francis T. F. Lovejoy, formerly secretary of the Carnegie company, and have organized the Banker Bros. Co., whose business it will be to manufacture, sell and deal in automobiles. The capital is \$50,000. According to report, it is the intention of the new concern to build a factory and make big vehicles. One recently bought in France by Mr. Frick is mentioned as the model. This is probably an exaggeration, however. The natural extension of the present business of the brothers will probably be sufficient to occupy them for some time.

Philadelphia Parade a Failure

PHILADELPHIA, Nov. 4.—Saturday afternoon's parade of local automobilists fell far short of what its promoters had hoped for. As compared with last year's demonstration it was a rank failure, and expressions of disappointment were numerous. But thirty-four machines were in line, as against eighty-nine last year. Various theories were advanced as to the poor showing, but none of them has been accepted as satisfactory. Of the thirty-four automobiles in the procession the majority were of the steam and electric species, the absence of gasolines being noticeable. Despite the paucity of the display, however, the public seemed to evince a deep interest in the parade, and turned out in large numbers all along the route. Four and six-seaters were comparatively numerous.

The Automobile Club of Philadelphia engineered the affair, the committee in charge consisting of Henry G. Morris, John L.

Wilson, Herbert M. Warden, Capt. John S. Muckle, J. Maxwell Bullock, H. Bartol Brazier, Matthew Baird, Jr., and Frank C. Lewin. Captain Muckle acted as marshal, with Messrs. Brazier and Bullock as aids. The parade formed at 3 p. m. at Broad and Walnut streets, and proceeded up Broad to Spring Garden, to Fairmont Park, thence along the River road to the Grant monument, where the procession was reviewed by President Henry G. Morris, after which the participants were dismissed, the majority of them continuing for short trips out into the country or through the park. The weather was brilliantly beautiful, and just cool enough to bring roses to the cheeks of the many fair ones who occupied seats in the line of glittering turnouts.

Plans for National Association

New York, Nov. 2.—At their meeting last Thursday the governors of the Automobile Club of America received and discussed the report of the special committee on club affiliation. The result of the report and its extended discussion was that Secretary Butler was directed to open correspondence with all eligible clubs on his list asking their opinions and suggestions as to the advisability and scheme of a federation of automobile clubs to control racing, procure uniform legislation, secure good roads and unite for general protection and the welfare of the automobile sport and industry.

Thirty-five clubs will be invited to enter the federation. Their numbers in the various states are: New York, 9; New Jersey, 4; Massachusetts, 6; Connecticut, 2; Rhode Island, 1; Pennsylvania, 3; Ohio, 5; Maryland, 2, and Illinois, Indiana, Michigan, Missouri and California, 1 each. Much of the discussion was in relation to racing government and the best form to be adopted.

Keene Tries for Records

New York, Nov. 1.—In a trial against time on the Empire trotting track this afternoon, in his Mercedes car, Foxhall P. Keene bettered the track records made by Albert C. Bostwick, but did not touch the figures made by Henri Fournier at this course on Oct. 11. Mr. Keene's times were: Quarter, 18½s; half, 36s; three-quarters, 54½s; mile, 1:12; mile and a quarter, 1:31½; mile and a half, 1:49½; one and three-quar-

NOTES AND COMMENTS.

ters, 2:07; two miles, 2:26; two and a quarter miles, 2:45; two and a half miles, 3:02; two and three-quarter miles, 3:20; three miles, 3:36.

In the Canadian Northwest

William F. Cochran, a *MOTOR AGE* subscriber at Macleod, Alto., sends the accompanying photograph of the first automobile



in the Canadian northwest. "It was taken," he says, "at our round-up camp on the range. I find it a grand one for going out shooting in, and have had great fun with it."

In 1871 the average weight of the locomotives in use in the west was about 12½ tons. To-day it is 92 tons. The size of the cylinders in the early days was 9x16 and the wheel base 6 ft. 2½ in., while now they are 22x28 and 14 ft. 8 in., respectively. These facts may be entertaining to makers and users of automobiles in view of the fact that for heavy work the tendency, both as to size and weight, is upward.

The automobile owners of New Orleans have big plans for the future, the general outlines embracing club headquarters at the Jockey Club property, in Esplanade avenue, a relay station 20 miles below Chalmette, and an elaborate exhibition of automobiles next winter, with road races between New Orleans and some coast city, probably Biloxi, as a star feature of the show.

Time is a great leveler, truly. Three years ago there was no greater enemy of things American in all England than one A. C. Hills, a gentleman whose importance, gauged by his own estimate, was on a par with that of the heir apparent. But now he has secured the agency for Birmingham and district for Goodyear tires and Mitchell motor bicycles. His opinion of things

American should soon be improved by experience with the two articles.

The Cleveland Club held its last run of the season last week, the members being the guests of Windsor T. White, of the White Sewing Machine Co., at Bass Lake. The next event on the programme is a smoker, to be held at the Chamber of Commerce, to which all owners will be invited, with a view to an enlargement of the membership.

Philo E. Remington and L. M. Graham, of the Remington company, left Utica in a Remington launch, bound for New York, and reached their destination, after a run of 250 miles, in 30 hours actual running time. The time made indicates, of course, that everything connected with the boat worked well throughout the trip.

Some time early in the summer complaint was made that automobilism in Buffalo was somewhat backward. If that condition ever existed it certainly does not now. It has been shown that machines pass Delaware avenue and North street at the rate of about two a minute. Not a bad record so early in the history of the industry.

James Dissette, of Philipsburg, Mont., will buy a six-passenger vehicle for use in the public service. He is also figuring on a 50-horsepower machine to carry freight between Granite and Combination, Mont.

The automobile has become a political machine. Out in Colorado the candidates have carried the country people to the place of registration, a thing they had never before been able to do on account of the distance.

Charles W. Spurr, Jr., has resigned the secretaryship of the Long Island A. C., finding it necessary to be away from home a great part of the time. L. A. Hopkins was elected in his stead.

The Shelby Steel Tube Co. gives notice that the New York and Chicago offices will be discontinued and that the sales offices will be consolidated at the Empire building, Pittsburg.

Oscar F. Lear, of Columbus, O., who was one of the founders of the Ohio Automobile Association, expresses the opinion that it will have at least 300 members in a few weeks.

George W. Bilton, of Detroit, has sold the right to make his repair tool for pneumatic tires to the Union Mfg. & Specialty Co., of Buffalo, and will travel for the concern.

INDEX



THE NEW YORK AUTOMOBILE SHOW



New York, Nov. 2.—That the automobile's the thing was brilliantly and impressively demonstrated at Madison Square Garden to-night when the second annual motor vehicle show of the Automobile club America was opened. The growth of the automobile industry and of the popularity of the motor vehicle was evidenced by more exhibitors, more and a greater variety of vehicles, more elaborate efforts at decoration and a far larger first night attendance than marked last year's show. The event started with a big hurrah and for a whole week the town will be given over to talking automobile as enthusiastically as it will talk horse a week or two hence.

Madison Square Garden has a clientele embracing the entire sport and amusement seeking population of the city and whatever it puts forth in the way of display or entertainment is universally and loyally accepted as "the thing" during the week devoted to its furtherance. Your automobile faddist will be just as much in enthusiastic evidence at the horse show as the turfite, the road driver and anise-seed bag chaser were in the crowded aisles to-night. Madison Square Garden is a universal temple for the preaching of the gospel of every fad, and so it is that its shows are invaluable in the propagation of whatever missionary work its various tenants seek to further.

It Was a Gorgeous Spectacle

This great amphitheater in the very heart of the city is a show place with hardly a rival and not a superior in the world. Its natural beauties and fitness for displays on an extensive and elaborate scale in themselves make of the most commonplace exhibits impressive expositions. But when to the 10,000 electric lights of its graceful arches overhead are added the artistically ornate decorations of the galleries and the

dazzling effects of light and color in the signs and furniture of the stands and the flash of fresh varnish and polished metal of the vehicles as they were to-night the entirety of the panorama is a gorgeous spectacle indeed.

The Garden was seen at its best to-night, as well befitted the wealth of goods on view and the manifest refinement and elegance of the throng, for whose instruction and entertainment the automobile show had been promoted. In every way were the surroundings in keeping with the dignity and importance of the new industry and the high class of those who are its main patrons. Those grand blazing arches of light were a sight in themselves. Around the sides above the gallery appear the American flag and the national colors gracefully draped and pinned in artistic festoons with the wooden-spoked, rubber-tired wheel bearing the club's name in gold, a reproduction of the club insignia of the Automobile Club of America.

Exhibitors Were Ambitious

Viewed from the gallery the main floor, which was given up entirely from wall to wall to completed vehicles, the sight was one which was commensurate in brilliancy with the glory of the arches of light above and the draping of colors around. It must be stated candidly, however, that not only was the view obstructed but also the sense of artistic propriety was violated by a failure on the part of the management to insist on the observance of the old and well tested rule of confining the signs to a certain standard height. Several signs were hung high in air above the general run of stand fixtures to the decided marring of the tout ensemble. The efforts of the exhibitors in the way of sign, fixture, furniture and decorative display, however, had been so ambitiously successful and so far in ad-

THE NEW YORK SHOW.

vance of last year's attempts that one soon forgot the petty peccadilloes of exhibitors who were bound to come higher than their rivals even at a possible cost to the general effect. Many of the less obtrusively inclined exhibitors commented in this connection most favorably on the strict rules of the Chicago show management in this respect.

Location of the Exhibits

The Winton exhibit faced the entrance and was flanked on either side by the displays of the Mobile on the left and of the Electric Vehicle Co. on the right. The Locomobile had the two squares in the center and surrounding them with high white pillars each topped with a big electric globe lost none of the conspicuous advantages of the favorable location.

The Locos shown on high stands added to the conspicuous effect. The Autocar Co.'s stand was also pillared in white, the pillars being connected by beams with one another, forming a classic portico enclosure effect. The Overman Automobile Co. had the span to the south. Its decorations in their originality and simple elegance—the gateways and red lettered signs—being in high-art ironwork, were decidedly Overmanesque and showed the hand of the master that in the cycle show days gone by never failed to give the desired significance of refined elegance in the showing of his factory's highest class products. The corresponding space to the Winton at the east end was taken by the American Bicycle Co., which had steam, electric and gasoline vehicles to show and required a generous allotment of floor space for the purpose. The De Dion-Bouton Motorette Co. made a beautiful and extensive display of its elegantly caparisoned vehicles, large and small, veritable triumphs of the carriage painter's and upholsterer's art. To the south of the A. B. C. the space was divided among the Steam Vehicle Co., Haynes-Apperson and the Stearns Steam Carriage Co.

Baker and the Peerless shared another block of space south of the Locomobile's west stand.

In all there were twelve blocks of space enclosed by the encircling aisle and cut by two east and west and by two north and south aisles.

In place of last year's track there was a

circle of stands around the arena. Defiantly flanking the entrance on either side were the foreign exhibits of Panhards and Renaults shown by Smith & Mabley, the American representatives, cut off on the north side, however, by the George N. Pierce Co. display. The United States Long Distance Automobile Co. had six spaces on the north side and the Desberon Motor Car Co. had also a big exhibit on this side of the circle.

Other exhibitors on the north side were the Geneva Automobile & Mfg. Co., Pope & Cushman, the Automotor Co., the Holland Automobile Co. and the Wheel Within Wheel Co.

At the south end the Searchmont Motor Co. occupied almost the entire space, the Upton Machine Co. and the Crest Mfg. Co. being to the north of them and the Robinson Motor Vehicle Co. to the south. Tucked away under the gallery at the southeast end was the very interesting exhibit of the Vehicle Equipment Co., whose feature was a big electric auto-truck with safe-hoisting machinery in operation.

Conspicuously large and impressive exhibits in the south of the circle were those of the Ohio Automobile Co., the Steamobile Co. of America, the Foster Automobile Mfg. Co., the Lane Motor Vehicle Co., the Prescott Automobile Co. and the Milwaukee Automobile Co. On this line were also the Century Motor Vehicle Co., the Ward-Leonard Electric Co., F. B. Stearns & Co., D. B. Smith & Co., the Duryea Power Co. and the Warwick Cycle & Automobile Co.

Parts Are in the Gallery

The gallery was given up entirely to makers of material, parts and sundries. There were 131 spaces, of which sixty-one were on the main floor. These were occupied by 100 exhibitors divided about equally between the complete vehicle and the parts and sundry makers.

The entire exhibit was in a remarkably well advanced state of completeness for a first night. On Friday afternoon there were not one-half a dozen booths at which any advance to speak of toward completeness had been made. Yet when the sweepers cleaned the aisles at half past seven o'clock to-night some unconnected electric circuits and a few missing vehicles were all that obtruded themselves upon the first

THE NEW YORK SHOW.

night visitors as evidences that there were more to come.

A loan exhibit of members' vehicles, which occupies the entire restaurant room at the right of the entrance, is made a feature of the show, and not a mere perfunctory display of a half a dozen machines as it was last year. In fact, it gives a chance to the visitor for a hasty and fairly comprehensive study of the entire progress of the automobile-building art here and abroad, for most of the leading American and foreign makes are represented here by one or more carriages. Winners in record-breaking, speed, hill climbing and endurance run tests satisfy the demand to see the machines that have won newspaper fame. The early history of manufacture in this country is also exemplified by several notable relics. These latter include an early gasoline carriage made by Nadig Brothers and procured by Senator Morgan for the exhibit; the first Locomobile made by the Stanley Brothers, loaned by Samuel T. Davis, Jr., and the first Gasmobile, made by the Automobile Co. of America, loaned by Alexander Fischer. A cell of the new Edison iron-nickel storage battery and samples of the A. C. A. sign posts are also shown. In this exhibit appears a very general collection of the leading foreign makes, mostly types of high-priced vehicles loaned by well-known millionaires.

Demonstrations Outside

Though the track, so popular last year, is not in evidence owing to the too stringent local gasoline regulations and the demand for extra space for exhibits, a better

chance than ever for visitors to enjoy an automobile ride and for exhibitors to demonstrate their vehicles in action is afforded by a system of return checks, whereby those in charge of the stands may take out parties to the motor carriages in waiting outside and give them rides under most favorable and impressive conditions on Madison avenue and the other neighboring asphalt avenues. Exhibitors may also take out vehicles on exhibit at the stands; but must return them before 3 o'clock in the afternoon.

The capacious assembly room at the Madison avenue end has been taken for headquarters for the members of the National Association of Automobile Manufacturers. It is in charge of Mr. Knappen, the assistant secretary. The leading automobile journals are on file and altogether the place makes a most welcome and convenient lounging room at all hours.

Arrangements have been made to furnish a daily luncheon at 50 cents per plate to the members of the manufacturers' association and their guests. After the luncheon a smoker is to be held for an hour each day, at which various topics will be discussed.

The prospects of business to be done seem encouraging. The new racing Gasmobile was sold the first night for \$8,000 to Mr. Brockaw after a contest for it with Mr. Bostwick. A parts maker in the gallery showed the writer a check for over \$500 as a first payment on a big order he had just taken.

The annual convention, election of officers and banquet of the National Association of Automobile Manufacturers will be the important event of the week to the trade.

THE SECOND AND THIRD DAY.

New York, Nov. 4.—The second night sees a complete show, a show pronounced by all hands to be far ahead of last year's. The track with its shifting panorama of moving vehicles, ever varying, always interesting, held the spectators' attention last season. But that track space was needed and by the margin that track affords for more exhibits is the show greater in the number of automobiles shown than last year's.

Since Saturday night the show has grown to 170 motor vehicles in all—145 in the

amphitheater and 25 in the loan annex. A motor bicycle, a 6-horsepower affair, weighing 175 pounds, made by the Marsh brothers of Brockton, Mass., has somehow crept in and found a lodgment in the Dow stand. It is a powerful looking machine of double fork crown design and mile-a-minute trials on Yankee roads are hinted at for it.

The big crowd of Saturday night was not in evidence tonight, and the attendance this afternoon was slim, but all the exhibitors agree that visitors come this year to study

THE NEW YORK SHOW.

and to ask questions and the questions are not of the dampfool variety either, showing a growth in automobile education in the general public.

It is more and more apparent as one studies the stands closely that American manufacture is tending toward the French types—not the English nor the German, but the out-and-out French types, with motors and water coolers in front and tonneau bodies behind. Weight is making an impression, and people are also looking for wider treads and longer wheel bases. They also want multiple cylinders.

Business prospects are good and many actual sales have been made already. The buyers are not coming from the novices and greenhorns either, but from those who have bought and used automobiles already and want something faster and better just as the Speedway novice gets the fever and wants a second or two faster horse at every purchase, or as the early buyers of the bicycle sought new models constantly. The demand for motor vehicles is undoubted. It is so great that some of the popular makers refuse to give any discount to dealers, saying that they can sell all they can make direct.

Makers Are Doing Business

The writer made a rapid whirl around the stands tonight to learn the business prospects and what had been doing thus early in the show. The Gasmobile people have sold all four of their exhibition vehicles—a 35 horsepower to C. V. Brokaw for \$8,000; a 20 horsepower, four cylinder, to W. L. Stow, one of the Westbury (L. I.) hunting crowd, for \$5,000; a 25 horsepower to Mayor Fleischman, of Cincinnati, for \$2,500; and another vehicle to Sidney Dillon Ripley for \$2,000. The De Dion people have already sold two surreys.

Many inquiries and favorable prospects were reported by Bob Garden at the American Bicycle Co.'s stand. Garden, by the way, will probably open an automobile establishment in New York. Interest among the buyers at the Mobile stands centers in heavy wagons. Intending promoters of stage lines from Richmond, Baltimore and other places south and west have visited this stand in force and today a deal was closed for busses for a line at Bloomingdale, N. J.

Smith & Mabley reported an active in-

terest shown in their foreign cars and several sales already. W. D. Gash at the Searchmont stand had no complaints to make. Buyers at this stand have various tastes. Those who have used automobiles seem to want long wheel bases and newcomers rather prefer a vehicle as near to a horse carriage in appearance as possible. Up in the gallery the parts people seem to feel encouraged, if Freddie Dickinson, at the Munger stands, correctly voiced the sentiment of those in the sky line.

There are but a very few hasty statements picked up, but they at least show a cheerful feeling among the exhibitors thus early in the week.

Fournier and Bostwick Clash

The makers who have gone in for racing and time records have no reason to regret their devotion to that end of the game, for the visitors seemed to know all the leading racing makes and to seek them out. In fact the racing and record tests seem to be valued as highly as they were in the early days of the bicycle games. And speaking of racing, Albert C. Bostwick and Henri Fournier, whose machine was placed in the Long Distance booth this afternoon, had quite a lively run in.

"I see you have questioned Winton's Detroit records," said Mr. Bostwick; "are you not aware that by so doing you have practically called the well known gentlemen who timed the trial liars?"

Fournier was taken aback by the abrupt attack of the young American and merely smiled in reply.

"And don't you know that we don't exchange cards in this country, but that when gentlemen are called liars their reply is generally a biff."

"What is a 'beef'?"

"You may find out some day."

Fournier declared that no such extreme meaning should have been inferred from his remarks, which were made to a MOTOR AGE man and quoted in this paper. He said he thought that such a sudden reversal of form in Winton's machine was incredible and that was all.

"You meet me in the Coney Island races with your Winton and I'll show you which machine can go the faster," said the Frenchman angrily.

"Thanking you for your polite invitation, I'll be there," replied Mr. Bostwick, as he walked away.

THE NEW YORK SHOW.

The young millionaire later in the afternoon tried to jolly Alexander Fischer into a race or a trial with his new 35-horsepower Gasmobile, but Mr. Fisher only laughed. The Gasmobile people, however, have plenty of sporting blood and several racing machines, which will doubtless be seen in the Coney Island time trials.

Society is taking its usual interest in the show. Senator Chauncey M. Depew and W. K. Vanderbilt were among the notables present this afternoon.

Shattuck Renominated

New York, Nov. 5.—(Special telegram.)—The attendance at the show tonight was fair, considering the election bulletin excitement outside. The returns were read and caused a tremendous demonstration,

bells and horns creating a tremendous din.

Visitors display extraordinary knowledge of the machines and question the demonstrators closely and intelligently. The track is sadly missed, despite all efforts to cover the shortage. The absence of a speeding machine, such as that shown at Chicago, is also remarked. Exhibitors, however, are greatly pleased with the character of the attendance, the sales made and the business prospects.

The Geneva exhibit arrived today. It includes a surrey and a runabout. An 8-horsepower Automotor tonneau also arrived.

Mr. Shattuck has been renominated by the committee for president of the club. An opposition ticket, headed by J Dunbar Wright, is possible.

THE MECHANICAL SIDE OF THE SHOW

BY ALEXANDER SCHWALBACK.

"Only the possible is attainable," is a trite but true axiom in mechanics and yet in a little more than a half of a decade the American automobile makers have attained the possible, as is evidenced at the show—not, however, on purely and wholly American lines, but largely influenced by French types of construction. Indeed if one could remove from the show the real American types, such as the steam and electric ones are, and the American names on the remainder, one could readily imagine it to be a miniature French show. Nor is this tendency to be deplored, for while there will always exist in this country a demand for the light and low priced runabout style of vehicle, a still larger, and what at present is most important financially to the makers, more remunerative, immediate demand is clamoring for high cost, great power and immense speed vehicles having multiple cylinders, large tonneau bodies, long wheel bases, low gravity centers, wide treads, big tires, and everything that is best in French construction of the gasoline type, all of which powerful construction must eventually result in bringing to the front what is destined to be a large, steady and continuous part of the trade, the making of vehicles for business purposes.

It is of course not the purpose of this

hasty review, partly for lack of time and physical ability, to describe in detail the mechanical features of the show, and which are described in the stand to stand reports and advance notices already published in these columns, but merely to summarize the leading features and tendencies, reserving for other and later articles a more extended and detailed review. With this modest disclaimer let us proceed to take a flying bird's eye view of the mechanical features and tendencies of the show as bearing on the 1902 products of the automobile makers of this country.

Gasoline is king, steam is second in favor, while electric power transmission is at a standstill waiting for Edison's cell, or sell, I do not know which is correct, to materialize, the only evidence of its existence being a sample in a glass case in the loan exhibit, its virtues and claims being placarded on a large cardboard sign alongside of it. Honorable mention must here be made of the Porter, the Sperry and the Exide batteries which are doing good work in all parts of the country. A new semi-dry battery called the Hydra is shown and if its foreign testimonials are to be believed it is the coming thing for the uses for which it was designed. En passant while on the subject of batteries it is well to here note that

THE NEW YORK SHOW.

hot tube ignition for gasoline motors is not seen at all, some form of battery being used to produce the spark, a modification of this being in conjunction with a magnet as used by Daimler, Duryea and Haynes-Apperson, the battery, however, in the last two named being only used to start the motor, and then cut out, the motor through the magneto producing its own sparking current. It looks like a taking and coming idea, doing away as it does with battery troubles and tending to amplification. Twenty-three makers show gasoline vehicles, thirteen show steam and five others show electric vehicles. The Locomobile people show a steam launch with their engine in it. Business wagons and trucks are not largely shown, the pleasure vehicle being at present the attraction, but a large crowd is always watching the hauling of a safe by a tackle of the block and fall type in conjunction with a windlass, power for which is furnished by a 6-horse electric motor on an electric truck made for the Hall Safe Co. by the Vehicle Equipment Co. of Brooklyn, N. Y. They also show a superb ambulance made for the New York Lying In Hospital, and also a business wagon. Other business wagons are shown by the makers of the Locomobile, and De Dion and Bouton.

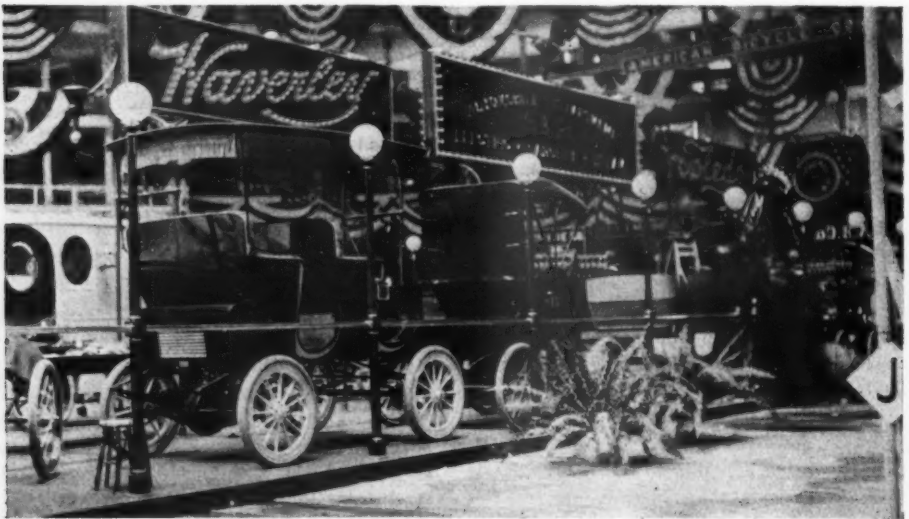
Sixteen makers show single cylindere gasoline motors, namely, the Panhard, Win-

ton, Peerless, De Dion, Crest, Pierce, Knox, Searchmont, Stearns, Warwick, Long Distance, Knickerbocker, Holland, Olds, Dearborn, Automator, but as it is evident that they have reached their highest point of development and use they must eventually decline in favor of multiple cylinders, if indeed their disuse is not already written on the wall, many of their makers already making or planning to make a multiple cylinder motor, every argument possible being in favor of the use of multiple cylinders, better distribution of weight, constant power and torque, less vibration, more speed and economy of operation being important factors tending towards the use of multiple cylinders in gasoline motors.

Thirteen makers show double cylindere gasoline motors, among them being the Winton, Haynes-Apperson, Gasmobile, Riker, De Dion, Knox, Searchmont, Long Distance, Holland, Automator, Steamobile, Peerless, Autocar.

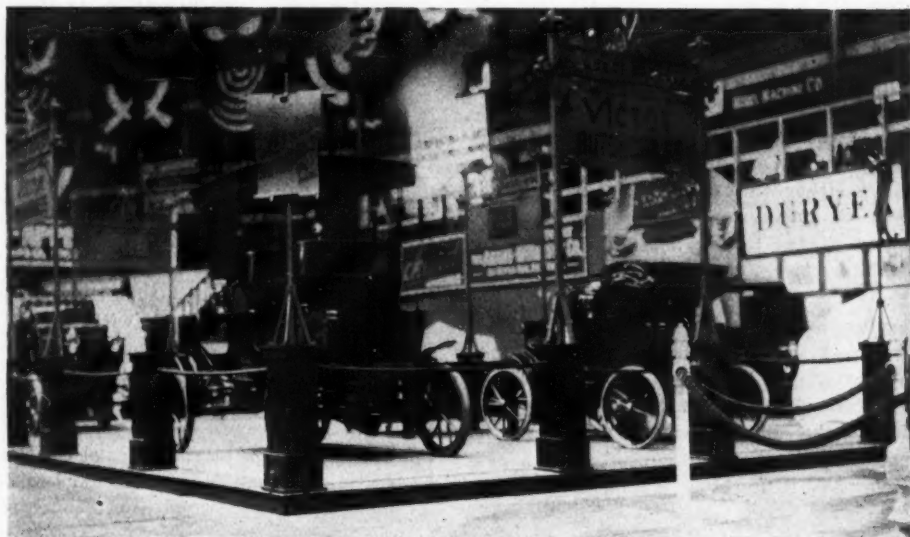
Six makers show multiple cylindere gasoline motors having more than two cylinders as follows: Gasmobile, 3, 4, 6; Duryea, 3; Robinson, 4; Long Distance, 3; Riker, 4; Peerless, 3, 4.

Water cooled motors are naturally the leaders and are shown by nineteen makers: De Dion, Pierce, Duryea, Robinson, Stearns, Gasmobile, Long Distance, Winton, Pack-



THE AMERICAN BICYCLE CO.'S EXHIBIT.

THE NEW YORK SHOW.



THE OVERMAN COMPANY'S BOOTH.

ard, Haynes-Apperson, Riker, Knickerbocker, Holland, Olds, Desberon, Automotor, Steamobile, Peerless, Autocar.

Air-cooled motors are not as popular as they were last year but are shown by the makers of the Knox, De Dion, Warwick, Crest and Pierce.

It is to be recalled that the Daimler company, which does not exhibit, uses a water cooled two cylindered 6½-horsepower motor, having a magnetic sparker, and which is further cooled by a rotary fan throwing air on the cooler, a recent run of 1 hour in one of their business wagons showing the writer the water as cool as it was when the run began. The idea, if not patented, should come into general use.

Steam vehicles are represented by the Locomobile, Mobile, Foster, Stearns, Overman, Reading, A. B. C., Century, Prescott, Lané, Elite, Milwaukee and Geneva.

Electric vehicles shown are the Electric Vehicle Co., Baker, A. B. C., Fanning, Vehicle Equipment Co.

Striking tendencies are the use of large wheel bases, wide treads, low centers of gravity, heavy running gears and frames necessitating heavy wheels and tires to support the powerful motors and tonneau bodies, even the steam and electric vehicles following this accepted and popular type of gasoline vehicle body construction.

With the use of multiple cylinders weights are being better distributed, the motor and water cooler in some instances being carried on the front axle, varied in some makes by carrying either the motor or cooler only there, the net result being to give the wheels a better traction on the ground, hence increased speed and economy of operation.

Body making, finishing and upholstering are now, it is evident, the result of calling in the coach maker as a helper, for they cannot be excelled in material, design, upholstery and exquisite workmanship, in the tonneau style especially, a popular variation being the detachability of the rear seat. The bodies shown a year ago with the exception of the electric vehicles being poorly made and finished, and showing signs of wear and poor material in a short time after being put to use. It is to be regretted that tangent spoked wire suspension wheels with steel rims are being rapidly crowded out of favor by wooden spokes, compression style wheels with wooden felloes, having shaped steel auxiliary rims to take the tires. A very popular and extremely showy style of wooden wheel being one called the artillery, Archibald's patent, with three point ball bearings and having straight wooden spokes of a fancy design, inserted in a long tapering metal flanged hub bolted to-

THE NEW YORK SHOW.

gether, having highly polished brass hub caps, the connection between the hub and spokes being somewhat on the well known Sarven type of ordinary wagon wheel, except that they are bolted together and the square shoulder of the spokes are pressed in. These wheels are especially attractive when the wooden part of the wheel is finished either in oak or painted a bright red. A popular patented wheel shown on many of the leading makes is called the Midgley, being of tubular metal construction, the spokes being made of oval taper tubing, brazed to thimbles or sleeves in a double hollow rim and also in the same manner to the hub which is of steel drawn and formed in dies. After being assembled in jigs the complete wheel is brazed at one operation by a dipping process in a crucible of molten spelter, making a brass covered steel wheel, which is afterward baked enameled, not painted, and which cannot rust.

Several types of double rim wheels are shown in an effort to get away from the puncture bogey, one called the wheel within wheel, having an outer rim fitted with a solid tire, one inner or concentric rim resting on two pneumatic tires fastened to an inner wheel by heavy cast spokes and a movable disk between the inner wheel's hub. The motion of this disk slightly compresses the pneumatic tires, which are of course puncture proof in this position.

Few direct spoke wire wheels are shown and there should not be room for them in any form of vehicle construction, especially where they are used with a steel rim, which does not possess the lateral resistance that a wooden rim does, but has a decided tendency to buckle under a transverse or lateral strain or pressure. A sharp sudden blow on the part of direct spoke wire wheel in the line of its longitudinal plane, and which is its strongest point, is liable to buckle or spring the rim. Weight for weight in any position bicycle experience, which counts for something, shows that the tangent spoke wire suspension wheel is the better of the two.

Hose pipe or single tube tires still lead, but the detachable inner tube is largely in evidence, and a disinterested observer must note that they will eventually supplant the first named. On the heavy gasoline vehicles 4x34 appears to be the popu-

lar size in single tube. They weigh about 30 pounds apiece and are about 1½ inches thick and cost about \$34 apiece, so that the popular price \$200 auto that the dailies are howling for won't appear just yet. As a matter of fact these big pneumatic hose pipes are really inflated cushion tires, having the advantage over the old cushion tire of an inflated inner air core which will prevent them from breaking through from the inside. A new type of this style of tire is the New York. The growing objections to the use of heavy single tube tires is the difficulty of repair, a plug is with difficulty inserted and owing to the non-constrictiveness of the fabric will not hold for any length of time, and must be vulcanized, which is expensive, an ordinary patch costing one-third of the original cost of the tire, besides taking from four to six days to do it, added to which is the difficulty of removing and replacing them on the rims. These remarks do not apply, however, to the smaller sizes such as the 28x2½ as used on the Locomobile and other light vehicles.

The Dunlop and G. & J. detachable inner tube tires are still shown and gaining ground on account of their ease of repair. The Goodrich Co. shows a new form of detachable clinchers, of the G. & J. type, but having also 4 clips fastened by nicked thumb-screws to the rim, and the Goodyear Co. have a single tube puncture proof one—a detachable one differing from the G. & J. only by bowing in the edges. The metallic band of two years ago is still shown, as is also the Munger, the Punctnot, the tread being protected by a layer of fiber, and the Kempshall, a heavy cushion tire, and the old stand-bys of solid tires with their metallic fasteners. The New York B. & P. Co. exhibit a repair tool for the hose pipe tires, which uses a plug of rubber inserted under stretch with solution, on the rubber band style of repair. This might do for small, light tires, but if a plug with a mushroom base will not hold under the tremendous air pressure in a big 4-inch tire, why then this little stretched plug without a base will blow out. The ball tire is again shown and the mechanical tire in an improved form, this tire being a series of spiral springs, covered with jointed movable metallic fish-like scales or plates, the whole ornamented by a rubber tread and secured to the rim by a flanged metal

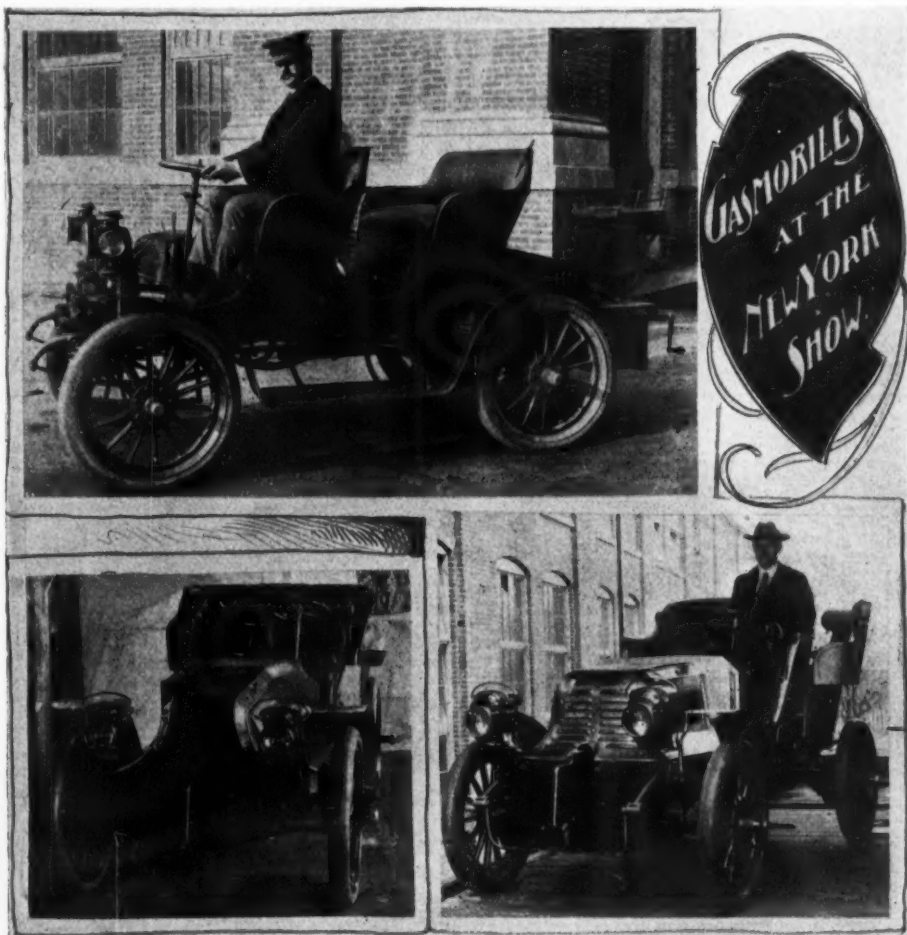
THE NEW YORK SHOW.

ring and laced over and finally bolted to it. Fournier says that he replaced 9 detachable tires on his ride from Paris to Berlin. It was well for him that they were detachable, for if they were big hose pipes the time used in getting them off and on would have delayed him at least 18 hours. Shraeder's valve is in almost universal use, but should be made heavier for automobile tire use, the plunger washers being too light to stand the heavy pressure and pumping heat.

Only one tricycle, a French one, is shown and three motor cycles—the Holland, the Merkel and the Marsh—all three carrying the motor on the lower main tube and having a belt drive. The Marsh is a powerful racing motor without pedals, having foot-rests and is rated at 6 horsepower, which is sufficient to drive it a mile a minute;

price \$350. It has double front forks and head with indirect steering and weighs 150 pounds. It has the strongest and sturdiest motor cycle frame ever made, being built of 8-gauge tubing throughout, to stand the terrific vibration which its powerful motor gives it. The seat is "away back" over the rear wheel axle, which will relieve the vibration somewhat.

Only three foreign makes are shown in the big hall, the Peugeot, Renault, and Panhard. A year ago they would have been the feature of the show, but so many of American makes are so Frenchy in their appearance that they do not attract the attention they deserve. The Winton racer without a dashboard, the Robinson Gasmobile, and De Dion are good types of this Franco-American style. Four Locomobiles



THE NEW YORK SHOW.

in motion on a sort of roller home trainer idea on a raised platform attract a lot of attention. Still nothing can atone for the lack of track showing the vehicles in motion.

Wheel steering is almost universal on the gasoline vehicles, the exceptions, as usual, being Duryea with his center-rod or lever in the middle of the seat, and the Crest, which has side steering by lever. On the steam wagons side steering only is used. On the electrics the center steering lever still prevails.

Bevel geared shafts are still largely used on driving shafts, but square gears are gaining in favor. In chains the roller is supreme. In changeable speed gears some interesting combinations of old forms used on lathes or other machinery are shown as

adapted to automobile construction. Space forbids a detailed description here, but will be covered later in connection with an article on running gears. Weights and prices seem to be going up together, the cheapest rig in the show being the "Crest," \$550. The biggest and dearest, the Gasmobile, sold during the first day for \$8,000. There were 145 vehicles in main hall on Monday, and 25 in loan-exhibit in small hall; total, 170.

The sum total of all of this is that we are now ready to lead the world in automobile construction, having taken what is best from Europe and added to it American shop methods and plans and adapted the whole to our needs and wants, thus making our supremacy in the art another contribution to American genius, skill and mechanics.



RIKER 16-HORSEPOWER GASOLINE TOURING CAR.

IN THE AUTOMOBILE DEPARTMENT

Mounted on jacks and operated by steam from the basement of the building one of the Reading carriages in the exhibit of the Steam Vehicle Co. of America is attracting much attention and comment. The seat and upper parts of the wagon have been removed and visitors are enabled to see the action of the four cylinder single-acting engine which is the feature of this carriage. The company shows six vehicles, model B, a stanhope, has a base of 62 inches, a 54-inch tread and 30-inch wheels. This machine is classed at 5½ horsepower, has adjustable by-pass, enclosed compensating gear, double acting brake and is finished and upholstered in attractive style. Model F. is the same carriage with a detachable dos-a-dos seat and heavier springs. Model G is a surrey of the same general description as the other models, but with a wheel base of 78 inches. It is geared 14 by 40 and contains a roomy space under the front seat for articles required when touring. Model H is a single seated touring wagon, having a wheel base of 72 inches and a water capacity of 34 gallons. The gasoline tank will hold 12 gallons. Model J is a light delivery wagon with a carrying space 48 inches wide, 29 inches high and 36 inches deep. Style K is another delivery wagon of more ornamental finish, capable of carrying about 750 pounds at 10 miles an hour. Leon Schmerhorn, general manager of the company, has already made several sales of his company's product.

Winton Motor Carriage Co.

Facing the Madison avenue entrance at the head of the center display is the exhibit of the Winton Motor Carriage Co., of Cleveland. The space is a large one and only four carriages are shown, but those four, and especially one of them, attract as much attention, if not more, than anything in the building. This one is the racer on which Alexander Winton recently lowered all existing records up to 10 miles. This machine exemplifies, more than anything else, the progress of the American manufacturer. Compared with it the imported racers look clumsy and awkward. It has a wheel base of 8 feet but is symmetrical and graceful in its lines. The sloping box in the front which characterized the racer owned by A. C. Bostwick has been done away with by lowering the radiating coils below the floor of the car and in its place is a perfectly level platform which runs back 5 feet to the seat, offering little obstruction to the wind. There are two seats, but only one is backed, the companion to the operator sitting on the floor. The machine has two cylinders and develops 40 horsepower. It weighs 2,600 pounds. The regular Winton touring car is represented by two vehicles, one showing the tonneau

attached and the other without. The new car has a double cylinder motor which will develop 15 horsepower. The car complete, with all tanks filled and tonneau attached will weigh less than 2,000 pounds. It will carry two people comfortably on the front seat and two in the tonneau. The seats are 4 inches higher than in other models on account of the advantage it affords in keeping farther away from the dust, but the center of gravity is lower than is the case in any of the previous models. This car has a decidedly improved system of gearing but holds absolutely to the Winton first principles. The low gear frictions are of increased size. Plates are made of steel. The gears are of bronze and steel. It has an entirely new type of steering gear, very sensitive, easily manipulated and in direction is absolutely positive. Should the forward wheels meet with a forceful resistance—a stone fence, telegraph pole, or the like—the steering wheel will yield and the gear absorb the pressure instead of remaining rigid and endangering the axle. The regular Winton stanhope is the other vehicle shown.

Haynes-Apperson Co.

Two vehicles are shown by the Haynes-Apperson Co., one a two-passenger runabout weighing 1,250 pounds, and having a 6-horsepower double cylinder motor, and the other a similar wagon having a 9-horsepower motor and weighing 1,900 pounds. The motors on these machines are arranged on opposite sides of the main shaft in a horizontal position and are simple in construction. The sparking device is of the make and break kind and that it is not affected by wet weather or muddy roads was evidenced in the recent endurance contest where two of the company's wagons made the best averages of any American machines in the contest. The wagons are equipped with wood wheels and are finished in handsome style. Elmer Apperson and Frank Nutt have charge of the exhibit.

F. B. Stearns & Co.

One carriage, a gasoline stanhope, is shown by F. B. Stearns & Co., of Cleveland. The power is supplied by a single cylinder 4 cycle engine which is controlled by a simple mechanical throttle. Connected directly with the fly wheel by steel coupling is the transmission shaft. This consists essentially of a high speed clutch, sprocket, hill climbing and reversing devices; all on a single shaft with no counter shafts; there are but 6 gears in the transmission which are of steel of the proper size and pitch, incased and running in oil. The clutches are operated by a simple arrangement of levers, and when set need no adjustment for weeks. There is said to be no jar, nor

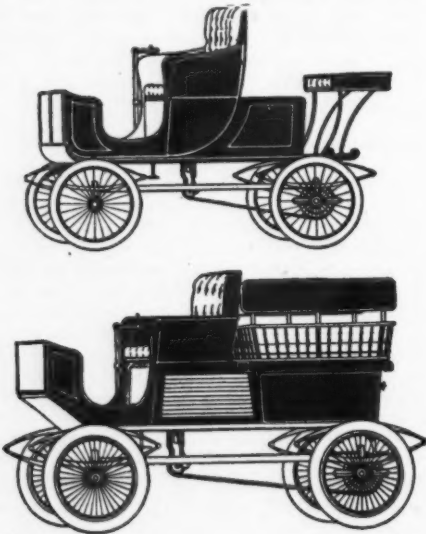
THE NEW YORK SHOW.

jerk, nor clatter in the use of the speed changing device in any of its three functions. A look into the machine shows no gears or unsightly parts. Each mechanical part can be removed for inspection or replacement without disturbing any other part. The engine is cast of especially prepared gray iron and is equipped with bronze bearings of proper size and length. The manufacturers claim that the cylinder is of so large a size and the bearings so well proportioned that the wear on them is rarely perceptible. The differentials are of steel with gun metal pinions.

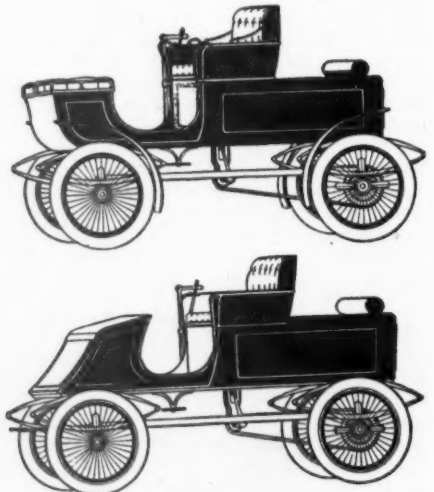
Locomobile Co. of America

Perhaps the first thing that strikes the average visitor on entering the building is the space occupied by the Locomobile Co. of America. Located in the center of the Garden and under three immense signs framed in electric lights the exhibit presents a striking and attractive appearance. At the corners and at intervals around the

reaches being 2½-inch 12-gauge tubing, steam air pump and gasoline pump. The dash is a gracefully curved box which can be instantly turned into a seat for two passengers. This carriage was sold the first day of the show. Touring model A is a wagon of similar construction, the box dash having a seat facing inward. Another new Locomobile is a depot wagon of heavy construction with a rockaway front seat, from which it is operated. A stylish victoria with rumble seat for attendant is also shown for the first time. This wagon has a wheel base of 69 inches, a 16-inch boiler and a box dash in which is concealed the gasoline tank. Two delivery wagons are shown, one with square side windows and the other with round windows. One of the wagons has been sold to Abrahams & Strauss, the Brooklyn dry goods house. Perhaps the handsomest wagon in the exhibit is a regulation Locomobile with a body of bright birdseye maple, with russet leather upholstery and yellow running gear. A dos-a-dos is shown finished in yellow and



VICTORIA.
WAGONETTE.



TOURING MODEL A.
TOURING MODEL B.

NEW LOCOMOBILE MODELS.

exhibit are tall white columns, topped with opalescent globes and connected with heavy red rope. The floor is carpeted with the same color carpet and on stands at a convenient level are three vehicles with wheels resting on rollers and operated by steam from concealed pipes. Ten wagons are shown, some of them never having been seen by the public before. One of them is a new touring carriage known as model A finished in a brilliant carmine. It has a wheel base of 73 inches, a 21-gallon fuel tank, a 49-gallon water tank, 20-inch boiler and burner, extra heavy running gear, the

black. A wagonette seating six passengers and having a convertible dash seat facing inward is attracting much attention. This has very heavy running gear, is fitted with the regulation brake on the differential and extra brakes on the hubs of each of the driving wheels. This wagon has an extra large engine and a wheel base of 69 inches. Among the improvements on the 1902 Locomobile is the differential gear, which has been changed from bevel gears to spur gears, and the device is completely encased, running in grease. The spur gears are keyed on the axle instead of being pinned

THE NEW YORK SHOW.

on, making it impossible for them to turn or loosen on the axles. Double acting brakes are placed on all the new models and both the water and gasoline tanks are made larger. General Manager J. A. Kingman is at the exhibit at times during the day, as is also President Davis.

Smith & Mabley

The enterprising firm of Smith & Mabley, importers of the Panhard and other European machines, is represented in three places in the show. In the team exhibit they have one machine, a racing 8-horsepower Renault of the low, rakish build, and several heavy Panhards which they have sold are exhibited by their customers, and on both sides of the main entrance the firm occupies spaces. In the north space is shown a Victoria, built by Peugeot, which arrived from the other side on Saturday; a Renault vortorette of 5 horsepower with tonneau body and De Dion motor being finished in dark blue with yellow running gear. In the space at the south end of the building is a 5-horsepower Renault vortorette with a basket body and two Panhards, one of 7 horsepower and the other of 12 horsepower. These machines have been described in these columns. The firm reports having made several satisfactory sales and expect to dispose of all the machines shown before the end of the week.

Warwick Cycle & Automobile Co.

The Warwick Cycle & Automobile Co., of Springfield, Mass., shows its stanhope, a handsome carriage with graceful lines. This carriage has a running gear made of steel tubing, heavy gauge, and of the most modern method of flush joints, with a new construction at the front to compensate for uneven surfaces in the road. The rear is made solid, the axles passing through tubes connecting the wheels with differential gears. The wheels are of the steel spoke laced pattern and 30 inches in diameter. The steering device is unique, being made with sprockets and chain, connecting with the steering-post, at the top of which is a handle that will remain in position, even with hands off, with no danger of getting away with the chauffeur, even when using both hands to put on gloves or to catch the hat when lifted by a sudden gust of wind. The engine is 5 horsepower and the transmission gear is arranged for two speeds, giving a range from 6 to 25 miles per hour.

George N. Pierce Co.

Two Pierce motorettes, made by the George N. Pierce Co., of Buffalo, an old established and well known concern, occupy a space at the left of the main entrance. The work of these machines in the New York-Buffalo run has been described in these columns. The vehicle only weighs a little over 500 pounds and was

unexcelled in its performance in the contest.

The transmission is direct and when running on the high gear only the pinion on the engine crank shaft and the spur wheel or driving axle are in action, the power being transmitted through the compensating gear. All these gears run in thick oil in a perfectly dust proof case; the lower gear is of the sun and planet type, the gears of which also run in oil in a dust proof case. The motor and gear are carried on a tubular steel underframe so constructed that any distortion of same will not affect the alignment of motor or gear, both of which are partially protected from road vibration by the front elliptical springs, the underframe swinging on rear axle as a pivot; the body is hinged to front of underframe and is carried on a spring at the rear entirely relieving the body from the vibration of the motor. This is a novel and very effective form of construction. The vehicle is steered by a lever from a center post between the two passengers, either of which can run the car. The speed lever, spark and gas levers are also manipulated from here. The slow speed gear can be used as a brake and there is also a powerful foot brake which will hold in either direction. Gasoline is carried to run over 100 miles, and from 30 to 35 miles can be run on one gallon of gasoline. The wheels are fitted with detachable double tube tires. The water tank contains enough water for a 40-mile run and is cooled by air current through a center tube in tank having funnel shaped ends. The natural circulation of the water keeps the cylinder head cool. A speed of 20 miles an hour can easily be attained, while an average speed of from 10 to 14 miles an hour can be maintained on country roads.

Robinson Motor Vehicle Co.

The Robinson Motor Vehicle Co., of Boston, shows two of the Robinson touring cars, one of which took part in the recent



endurance contest. The Robinson car which has been described in these columns is modeled after the European style, the

THE NEW YORK SHOW.

motors being in front with a roomy tonneau body behind. The engine consists of four vertical cylinders 4-inch bore by 6-inch stroke with splash lubrication. The water is circulated by a rotary pump. The engine and all the parts are easily reached and there is very little vibration or noise. Those in attendance at the exhibit are John R. Robinson, J. H. Robinson and H. B. Coleman.

Pope & Cushman

A Chicago product, the Fanning electric runabout, is shown by the Fanning Mfg. Co., for which Pope & Cushman, of 240 W. 23d street, are New York agents. The body of the carriage is made with a tail-gate so that the battery trays are easily removed when necessary. When placed in body they automatically connect with flat springs, making a positive connection with the contacts, and practically impossible to make an imperfect connection. The front steering axle is of one piece, leaving no bolts or fastenings to come loose, making a secure device for this purpose. The motor is suspended from the rear axle and provided with an eccentric bushing which allows the adjustment of driving gears. The weight of the motor is carried by two straps attached to rear end and connect with two springs fastened to body, which relieves the axle of the strain of carrying the weight of motor.

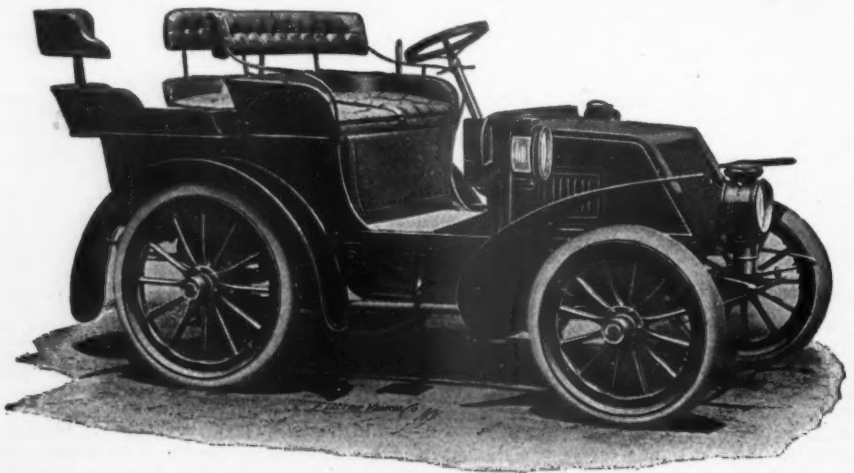
Electric Vehicle Co.

When the electric side lights of the various types of vehicles which are shown in the exhibit of the Electric Vehicle Co. are lighted at night the appearance of the display is extremely attractive. The quiet refinement of the electric carriage is nowhere better illustrated than in the company's exhibit. One of the first vehicles that strikes the eye is an electric tonneau, the

first of its kind in this country. In appearance it closely resembles the foreign gasoline carriage of the same type but the clean lines of the front shows the absence of an engine. The hood which on a gasoline machine would cover the motors, holds batteries while another set of batteries is under the operator's seat. The tonneau is removable and in its place may be substituted another seat, a rumble or a hamper. The Elberon victoria having stylish lines and rich upholstery is another new vehicle. This wagon has a double motor equipment, with the steering rod and the controller handle on the left hand side, leaving a clear space in front of the seat. The battery is divided evenly on the front and rear axles. Among the other vehicles shown is the Seabright runabout, having a graceful sloping box dash with brass rail; the Columbia phaeton, which has been on the market and is in general use; the Columbia surrey, which carries four persons and will hold six; the Columbia cabriolet, which is intended for general driving and social functions and has a long wheel base and flexible spring suspension, and the Columbia square front brougham, having bevel plate glass windows, silk curtains, speaking tube, incandescent electric light in dome fixture, foot warmer outlet, toilet case, including card pockets, memoranda pockets, mirror, cut glass bottles and watch. Among the other electrics are a demi-coach and a handsome cab.

American Bicycle Co.

At the rear of the center aisle, opposite the Fourth avenue entrance, is the attractive exhibit of the American Bicycle Co., the largest in the show. Surrounding it on all four sides is a brass railing, broken at each side by an entrance. At intervals of every few feet rise ornamental brass posts surmounted by electric lights enclosed in



ELECTRIC VEHICLE CO.'S GASOLINE TONNEAU.

THE NEW YORK SHOW.

opalescent glass globes. The ornamental entrances to the exhibit have globes larger than the others and hung high over the entire display are the illuminated signs bearing the names of the three vehicles produced by the company, the Waverley, Toledo and Hydro-Car. The three machines, electric, steam and gasoline, respectively, are arranged in divisions. In the Waverley exhibit are samples of the stanhope No. 21, with top No. 22; model 20, a surrey, has ample room, of extremely stylish finish. The Waverly delivery wagon, model 3, is finished in white and makes a handsome ap-

pearance. The model A carriage which carried George Soules and James Mitchell, the heavy-weight hammer thrower, from Toledo to New York, is also on exhibition. In the center of the exhibit an ingenious device has been erected to show the action of the siphon which is a feature of all the Toledo carriages. It consists of two large metal pans, one above the other, and illustrates the action of the siphon on the carriage. With the use of this siphon the operator is enabled to quickly attach the hose, which is supplied with each carriage, and, dropping the end provided with



SPLENDID DISPLAY BY THE LOCOMOBILE COMPANY.

pearance. It has a wheel base of 80 inches, 30-inch wood wheels and 3½-inch tires. Two motors are used with a normal capacity of 4 horsepower each and the wagon has a speed of from 5 to 15 miles per hour.

The other division of the exhibit is devoted to Toledo steam carriages, samples of all the models being shown. Model A has a body of the regulation Toledo type. It is fitted with the well-known Morgan water tube boiler, with 19-inch burner, a 31-gallon water tank and two gasoline tanks with a capacity of 4½ gallons each. It is fitted with water and air pumps, with a hand water pump in connection with the steering lever which attracted so much attention when the wagon was shown at last year's show. Model B is the same carriage with top. Model C is the Toledo surrey, a handsome, roomy vehicle with graceful lines and attractive finish. Model D has a special 64-inch body and is intended for long-distance touring. The dash slopes out

to a knife edge, giving a large space for a strainer into some wayside stream or corner watering trough at a country inn, can, by opening a valve, fill the water tank in about half the time required by the laborious method of carrying a bucket. The siphon is extremely simple, no complicated mechanism being used which would be likely to get out of order. The siphon is attached to the rear right hand corner of the 30-gallon copper water tank, which latter is also provided with strainer and flusher for cleaning out.

Among the well-known men who are in attendance at the company's exhibit are A. E. Schaaf, general manager of the automobile department; R. L. Morgan, manager of the Toledo factory; H. A. Githens, manager of the New York branch; A. G. Southworth, manager of the Brooklyn branch; W. M. Morrison, R. P. Searles, A. E. Morrison, E. O. Durfee, Alexander Doe, H. B. Anderson, V. E. Lacey, W. B. Lowe, Walter

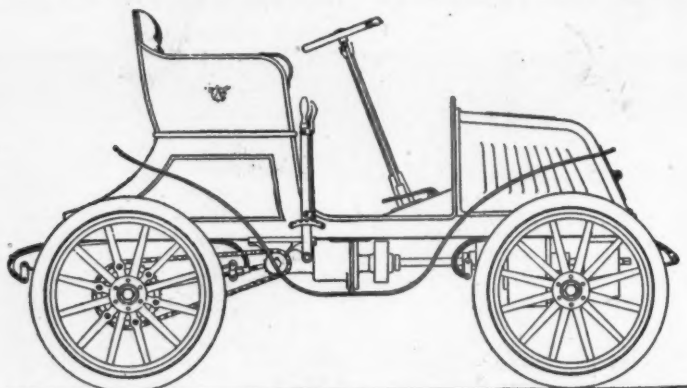
THE NEW YORK SHOW.

Stebbins, George Soules, H. G. Fiske and T. E. Morford.

Milwaukee Automobile Co.

One of the style A stanhopes made by the Milwaukee Automobile Co. is shown in that firm's exhibit at the right of the main entrance. The vehicle weighs 700 pounds and is as neat an appearing rig as appears in the show. One of the engines used in the Milwaukee carriage is

of the show. No railing is used and the floor is covered with a heavy red carpet and handsome rugs. The vehicles are shown in various finishes and present an appearance which shows taste and refinement. The company shows, among other vehicles, a new model known as No. 4, fitted with a single cylinder 8-horsepower motor, and takes the place of No. 1, which was fitted with same motor. While it is made amply strong, it has been made as light as possible, and in order to better accomplish this



THE SEARCHMONT CO.'S NEW MODEL.

also shown. The engine has 2½-inch cylinders, having a stroke of 3½ inches, the crank shaft, with engine sprocket and eccentrics, being one single steel drop forging instead of a number of pieces as in some other makes. When running at 450 revolutions per minute, it will develop about 5 horsepower. An oil feed cup is attached supplying the cylinders. The valves are operated by link motion, enabling the operator to take any speed desired, forward or backward, up to 30 miles an hour. It is made of bronze and steel, each part accurately adjusted and interchangeable. It weighs but 45 pounds and is a compact piece of work.

The gasoline can be cut off from the seat and the burner is fitted with a regulator of the firm's own construction. The boiler has a fusible plug which melts when the water falls below a certain height. The wagon has a very complete equipment including electric light for the gauges and water glass. The New York agent of the company is the Wm. H. Webster Automobile Co., of 8 West 60th street.

Searchmont Motor Co.

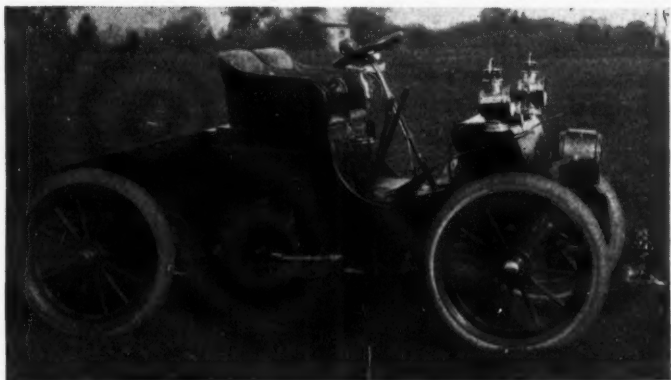
Occupying nearly the whole eastern end of the building is the attractively arranged exhibit of the Searchmont Motor Co., of Philadelphia. Against a background of huge American flags, surmounted with a large electric sign bearing the firm's name, the various styles of the company's wagons make an exhibit which is one of the features

of the show. No railing is used and the floor is covered with a heavy red carpet and handsome rugs. The vehicles are shown in various finishes and present an appearance which shows taste and refinement. The company shows, among other vehicles, a new model known as No. 4, fitted with a single cylinder 8-horsepower motor, and takes the place of No. 1, which was fitted with same motor. While it is made amply strong, it has been made as light as possible, and in order to better accomplish this

Peerless Manufacturing Co.

That the adjustable tonneau type of vehicle is rapidly gaining in popular favor is evidenced by the crowds which are constantly in attendance at the exhibit of the Peerless Mfg. Co., of Cleveland. This company shows three of its carriages, one 16 horsepower and the other two 8 horsepower. The former is finished in red. One of the lighter cars is finished in white and gold, a beautiful appearing carriage, and the other in black and red. The Peerless is modeled after the European types, having the motor in front. The frame is built of channel iron and both front and rear wheels are pitched inward. The motors are of a vertical type of the firm's own make, with crank discs en-

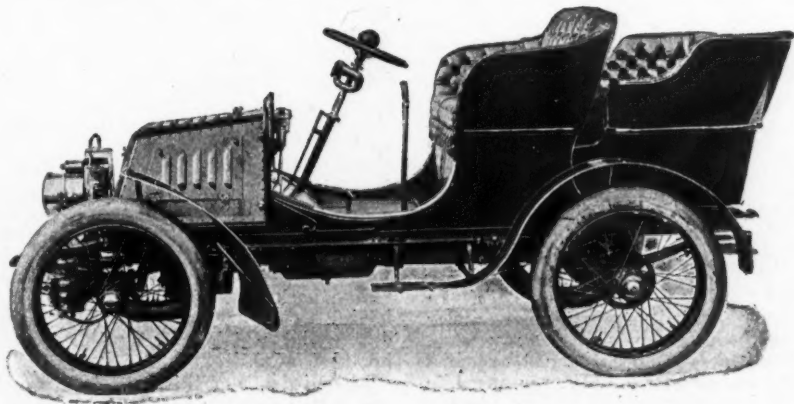
THE NEW YORK SHOW.



THE NEW 12 HORSEPOWER PACKARD.

closed in tight aluminum cases running in oil bath, which automatically lubricates the cylinder and all bearings. Owing to the vertical position of the cylinder all sides are equally lubricated with the piston rings wiping uniformly the entire circumference, and thus preventing excessive amount of oil in the firing chamber which obviates a prolific cause of obnoxious odors. The arrangement of the firing chamber and spark plug makes the plug self-cleaning. Ignition is by the jump spark system. Circulation is by means of centrifugal pump operated by friction disc against the fly wheel. Cooling is by radiating coils at the front and requires only 2 or 3 gallons of water. Starting is accomplished by a half turn of crank, which is placed at the front of the car. The drive is by means of beveled gear attached to the compensating gear which is part of the rear axle and is perfectly protected from dirt, mud or water. The speed gear is connected with the driving gear by a flexible shaft. The gears are enclosed in the aluminum case running in oil bath which automatically lubricates all

bearings. The speed gear is self-contained and is connected with the motor by universal coupling which protects the bearings, gears and clutch from any strain due to inequalities of the road. The speed is controlled by a single lever at the right, giving three speeds forward and reverse, with advancement and retard of spark to regulate the speed of the motor. A powerful band brake on each rear wheel is operated by a lever at the right and held by a ratchet until released. A foot brake operates on a drum between the motor and the compensating gear. By means of a knuckle joint and sleeve the top part of the steering column is bent, throwing the steering wheel away from the chauffeur when mounting or dismounting. The sleeve operates by a spring holding the column rigidly without back lash or sway; this makes it possible to place the wheel well into the chauffeur's lap yet entirely out of the way when mounting. All parts are oiled by means of sight feed oil cups and pressure pump, placed in front of the seat. Tires are of the Michelin clincher pattern of American manufacture,



THE 16 HORSEPOWER PEERLESS.

THE NEW YORK SHOW.

30x3 inches or 30x3½ inches. All two-passenger cars have rear platform, which may be used for luggage, rumble seat or two-passenger tonneau.

Baker Motor Vehicle Co.

Two stanhopes and four of the well-known Baker runabouts comprise the exhibit of the Baker Motor Vehicle Co. These wagons are attractive in design and are among the lightest electric vehicles made, the stanhope weighing, with battery, 900 pounds, and the runabout, similarly equipped, 600 pounds. The feature of the Baker vehicle is the controller, which is conveniently located outside the seat. It is practically non-sparking and eliminates any possibility of welding the contacts. It is operated by the left hand and has three speeds forward and reverse. Pushed back to the limit it acts as a brake on the motor. The stanhope is designed especially for ladies' use, as outside of the controller there is nothing to operate but the steering lever and the emergency foot brake. W. C. Baker is present at the exhibit and he is assisted by M. L. Goss, from the factory of R. D. Grey, the New York representative of the company.

Ohio Automobile Co.

The well known Packard machine, which was described in detail in the last issue of the *Moron Age*, is shown by the Ohio Automobile Co., for which the Adams-McMurtry Co. is the New York agent. Two machines are exhibited, one a handsome red stanhope with bright brass levers, and the other a dos-a-dos. The new 12-horsepower Packard is considered one of the fastest machines of its kind as its work in recent competitions testifies, and that the machine is destined for a big sale is evidenced by the fact that both vehicles shown were sold before the show was two days old.

One of the machines shown by the Ohio company is the identical machine which went through the endurance test. The other is the new model F, a direct development of the earlier models. The essential features of the company's product, such as automatic spark control, spring drive and automatic self-adjusting carbureter are retained. Wood wheels with 4-inch clincher tires are used. All wheels are 34 inches in diameter. Front wheels and live rear axles are fitted with special Baker ball bearings. The wheel base of the machine is quite long, 7 feet from center to center of axles and the body sets much lower than is usual with American machines. A most ingenious system of spring suspension is used on the rear axle and a simple link device for holding front axle in place. In this manner necessity of distinct under frame for the carriage is done away with. Three direct geared speeds ahead are provided and one reverse. Whatever speed is desired is instantly picked up by placing

the speed lever in the desired position and to effect any change of speed, it is not necessary to pass through any intermediate connections. Both lever and pedal clutch are fitted. Only one clutch of improved form and of very large working surface is used. The cooling arrangement, consisting of radiators under footboard and gear pump, is the same as in the company's older models. All gears run in an oil bath. The engine crank is also incased. All parts of machinery requiring oil are fed from special pump and reservoir. Oiling is thus entirely automatic, all that is necessary to attend to being to keep reservoir filled, and one filling is sufficient for 150 miles running. The usual form of wheel steering is fitted.

The Passaic Automobile & Transportation Co., which has four Mobile wagonettes to dispose of, show one of the machines. This company has used the vehicle a short time.

Century Motor Vehicle Co.

W. Van Wagoner, of the Century Motor Vehicle Co., of Syracuse, came from that city to New York on one of the company's wagons and during the week the same wagon will be used to take prospective purchasers around the city and illustrate what the Century will do. Another wagon is shown in the company's exhibit together with a set of the chambers driving gears, engine and burner. In the Century engine a solid case holds all the parts perfectly in line and protects them from dirt and accidents. The crank-shaft is turned from one solid forging. That the chainless drive is practical is illustrated not only by the number of Centuries now in use, but by the performance of one of the wagons in the endurance run. The vehicle did a most creditable performance and that it is appreciated is shown by the many inquiries which visitors to the show make when they see Mr. Van Wagoner's exhibit.

Desberon Motor Car Co.

The two extremes in motor wagon building are illustrated in the exhibit of the Desberon Motor Car Co., of New York. By the side of a big 4½-ton steam truck, which has been running around New York for some months, is a light 4-horsepower gasoline runabout, built after the French type with the motor in front. The carriage weighs 800 pounds and has a motor which is both water and air cooled. The cylinder is made separate from the combustion chamber and head, former being cooled with radiating flanges and the latter with a water jacket. The gear box is located directly back of the motor and the shaft having two universal joints extends to the differential which is driven by bevel pinion and gear.

Mr. Birdsall, of this firm, is a prominent and active member of the Automobile Club

THE NEW YORK SHOW.

of America. He has had an extended experience in the building of motor cars. His factory at 12th avenue and 51st street is the only one of its kind in the city and is equipped and has facilities for every kind of automobile work.

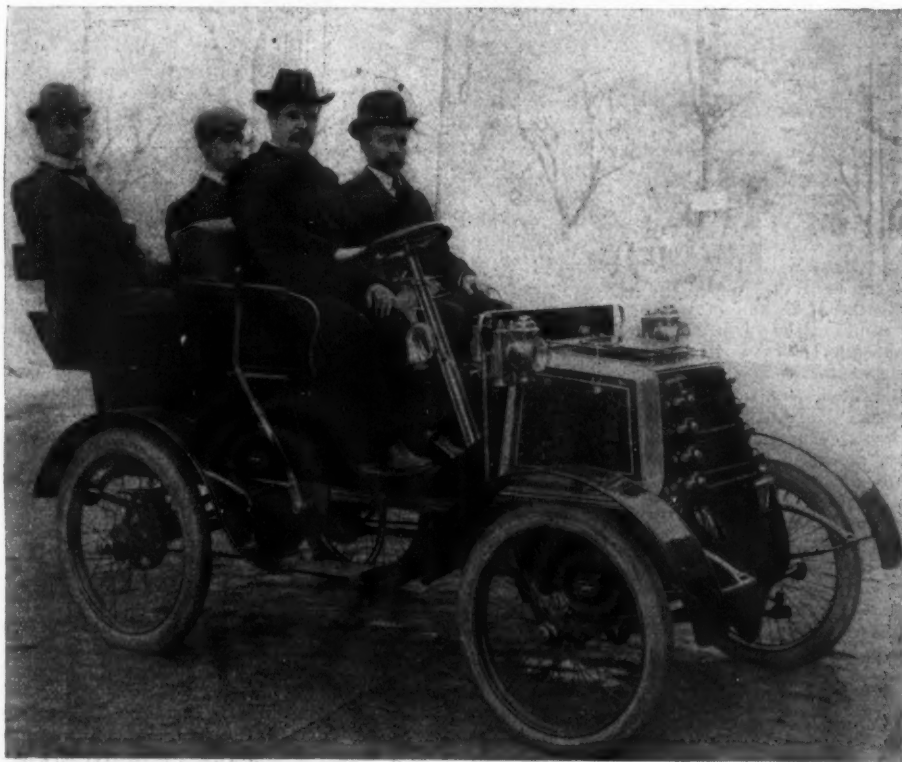
The Autocar Co.

Surrounded with beautiful white colonial columns bridged at the summits with white beams from which hang cut-glass lights, the exhibit of the Autocar Co., of Ardmore, Pa., makes a distinguished showing. In the center of the exhibit is an Autocar in skeleton, with the body in the white, showing the action of the motor. Among the vehicles shown are a runabout, a small touring car, a phaeton and a dos-a-dos or golf trap. The vehicles are fitted with a double balanced 8½-horsepower motor, the cranks and moving parts being enclosed in an aluminum case. The transmission gear is also enclosed in an aluminum case and provides for from 8 to 21 miles per hour ahead and a slow reverse covering all the requirements. Six gallons of gasoline are carried in the forward hood and an equal amount of water which is circulated by a valveless centrifugal pump. Wooden wheels and 3-inch tires are used. Model C, the dos-a-dos, has

springs, side bars and running gear of ample strength for the carrying of four persons. The rear seat is made detachable and a panel is furnished so that the car can be changed from a four-passenger to a two-passenger vehicle by throwing out a catch and putting the panel in place of the rear seat. With his characteristic indomitable energy, William Morgan, general manager of the company, left a sick bed to be present at the show. He is kept busy showing the silver cup which he won in the hill-climbing competition of the New York-Buffalo endurance race.

Foster Automobile Manufacturing Co.

In the center of the exhibit of the Foster Automobile Mfg. Co., of Rochester, N. Y., is a Foster wagon with the body removed showing the action of the engine. On either side is a runabout, one with a top. The Foster engine weighs 150 pounds and develops 8 horsepower, has hardened tool steel sprocket, eccentrics, shaft and connecting rod cones, crosshead, crosshead pins, links and blocks. Phosphor bronze is used in the guides, shaft and connecting rod bearings. No balls used and bearings can be accurately adjusted to 1-224 part of an inch. There is a positive locking device to



THE NEW 8 HORSEPOWER DE DION.

THE NEW YORK SHOW.

hold adjustment. The engine, it is said, will operate as quietly on $\frac{1}{2}$ cut off as on full stroke and with marked economy. The water pump is of slow speed but large capacity.

The boiler is 16 inches in diameter and is 14 inches high. The running gear is of extra heavy tubing, the front arch being equipped with very heavy yokes and knuckles. The Foster wagon has a seat on the dash and is gracefully proportioned. Park Densmore reports several sales and expects many more before the end of the week.

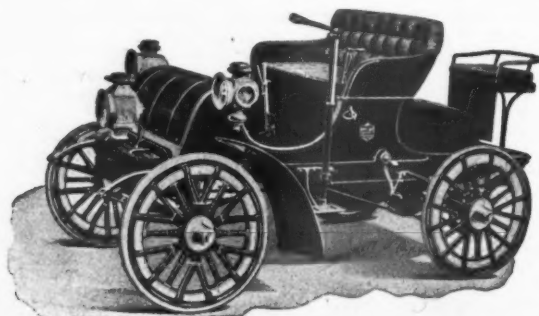
Wheel Within Wheel Co.

What was looked upon last year as something of a freak has this year, in the wheel within wheel, developed into a practical device which has already been used over all kinds of roads and proved its value. The wheel is being exhibited by the Wheel With-

outer wheel to move in any direction service requires, but checked in such movement by the resistance in the pneumatic tires between the two rims; thus the outer or suspended wheel communicates through the pneumatic tubes resiliency to the secondary or inner wheel. The first cost of the wheel is less than any other of equal size and strength, especially when the cost of outer pneumatic tires is considered, not taking into estimation their frequent renewals.

Olds Motor Works

The well known Oldsmobile, the product of the Olds Motor Works, of Detroit, occupied space No. 23. S. S. Olds is in attendance and on Tuesday R. D. Chapin, who came to New York in one of the company's wagons, arrived and intends to use the same wagon for the rest of the week demonstrating its work around the streets of New



THE WHEEL WITHIN WHEEL.

in Wheel Co., of New York, and George S. Lee, the patentee, is kept busy explaining its advantages to a crowd which is constantly in attendance at the exhibit. A Gasmobile fitted with these wheels forms a part of the exhibit. While the wheel looks complicated it is in fact a simple affair. It is a combination of two distinct wheels working collectively within and with each other; but obstacles met with, or resistant shocks sustained, are taken up by the pneumatic tubes, whilst the interlocking of the two wheels secures the greatest degree of rigidity, allowing gears to be placed upon the hub, or brake applied to the surface of the outer tire. Heavy wire or steel spokes connect collars fitted to the exterior ends of each half hub to the central rims supporting the pneumatic tubes; obviously any hub motion is communicated to these supporting rims. Surrounding and overlapping the tubes so supported are other rims not connected with the movable wheel members, but to the outside channel or wheel tread, and act as buffers or artificial ground for the compression of the supported tubes. Spokes pass between these rims and are connected at their interior ends to the central hub or interior wheel through which the axle passes, allowing the suspended or

York. The Spaulding-Bidwell Co. is the New York selling agent for the machine.

Knox Automobile Co.

The new four-wheel Knoxmobile was the feature of the exhibit of the Knox Automobile Co., of Springfield, Mass. The body of the new machine closely resembles the well known three-wheel wagon. The vehicle has an ingenious fan arrangement for cooling the porcupine motor. No reaches are used, the body being supported by two springs similar to the Oldsmobile. The wagon is made with one cylinder at a list price of \$1,000, and with two cylinders at \$1,500. A regular three-wheel Knox is also shown.

Automotor Co.

The Automotor built by the Automotor Co., of Springfield, Mass., has been illustrated and described in these columns. The company shows one of its two passenger cars and has a new light tonneau machine on the way to the city. The company has sold a number of its vehicles in various parts of the country and the tonneau machine which a *MOTOR AGE* man recently saw at the factory will no doubt jump into popular fancy. It is fitted with a 5-horse-

THE NEW YORK SHOW.

power De Dion motor hung under a bonnet on the front axle and is equipped with a centrifugal clutch which is the product of Hinsdale Smith, the president of the company. With this clutch the change in gears is made without shock or jar and on rough or hilly roads prevents the engine from stalling. The company's wagons are finished in attractive style and owing to their easy handling do not need the services of an expert chauffeur to run them.

Ward Leonard Electric Co.

One Knickerbocker car comprises the exhibit of the Ward-Leonard Electric Co., of Bronxville, N. Y. This car has been described and illustrated in the MOTOR AGE. A feature of the Knickerbocker to which the manufacturers draw particular attention is the transmission of the power of the motor direct to the differential on the rear axle by a flexible shaft fitted with a variable gear, so that at the high speed there is no gear in use. The De Dion engines and carbureters are used.

D. B. Smith & Co.

A vehicle which is attracting considerable attention both from visitors to the Garden and the exhibitors is that shown by D. B. Smith & Co., of Utica, N. Y. It is a steam stanhope of original design and finish. The dash consists of a curved box surmounted

by gold finished fligree metal work. The box is gracefully curved and gives the wagon a distinctive appearance. All the exposed metal parts are also gold-plated and the body is finished in maroon and black striped with carmine. Tubular wheels are used and the steering wheels have a narrower tread than the driving wheels. The wagon is called the Elite and while it is stated by the manufacturers to be intended for pleasure and touring purposes it will undoubtedly find a more ready sale for city use, the non-tracking of the running gear, while adding to its appearance, making it hardly suitable for rough country roads.

Motor Cycle Manufacturing Co.

One of the two motor bicycles in the show is exhibited by the Motor Bicycle Mfg. Co., of Brockton, Mass. It is a 6-horsepower machine for which a mile in 1:02 3-5 seconds, on a straightaway course, is claimed. It is listed at \$350. The motor is hung in a frame with a drop in the lower bar and power is transmitted by a belt. A double fork adds strength to the front of the machine and the tank and batteries are carried on the top of the frame.

Stearns Steam Carriage Co.

From the fact that T. E. Griffin, of the Stearns Steam Carriage Co., of Syracuse,



THE STAND OF THE STEARNS STEAM CARRIAGE CO.

THE NEW YORK SHOW

is kept so busy showing the wagon he has outside the building to prospective purchasers, it would appear that the week will prove profitable to his company. Three vehicles are in the exhibit: Model A, a runabout; model B, a trap or dos-a-dos, and model E, a Victoria top runabout. Model A is painted in yellow, handsomely striped with black and carmine. Model B is built on similar lines, with an adjustable seat at the rear for two persons. It has a larger boiler and engine capacity and is handsomely finished with a running gear of carmine with black stripes. Model E is a carriage for physicians and other persons who desire to use it in all kinds of weather. The Stearns carriages have standard tread, wide seats, side steering lever, low water alarm, feed water regulator, large gasoline and water tank and double acting brakes.

Overman Automobile Co.

Square uprights of black Flemish oak from which rise wrought-iron posts having graceful scroll shields of the same material bearing the name Victor mark the exhibit of the Overman Automobile Co. as one of the most refined and tasteful in the Garden. Over the entrances at the four sides of the exhibit are ornamental black iron gateways, each surmounted with a red V. The floor is carpeted with green matting and a table and chair of Flemish oak complete the harmonious decoration with which the four carriages of the company are mounted. In the center of the space is a black column, holding a glass case containing the pump and grade meter which the company is placing on the market. The four carriages shown are a surrey, two runabouts and a dos-a-dos, model of 1902. The surrey has a wheel base of 85 inches, Midgley tubular wheels and the Overman running gear. It is equipped with two water glasses, one within and one outside the body, a 12-gallon gasoline tank and a burner valve which is regulated from the seat. The water glass is provided with push buttons at the top and bottom to unseat the balls for removing the glass when the latter breaks. The steam water pump and the steam air pump which were heretofore operated by push buttons are, on the new models, operated by a small lever on the rocker shaft, being pushed forward for the air pumps and backward for the steam pumps. The pumps work as long as the lever is in position and it does not have to be held down by the operator like the push buttons. An 18-inch boiler is used and there are three try-cocks on the meter column. The fusible plug has been changed to a horizontal position, where it is easily reached. The new models have combination air and steam gauges, two hands operating on one dial, one red and the other black. The dos-a-dos has a basket top, 61½-inch wheel base and is also filled with tubular wheels. Those who are present in charge of the exhibit are D. E. Rianhard, C. L. Cummings

and J. V. L. Rianhard. Mr. Overman is expected later in the week.

Crest Manufacturing Co.

The Crest Mfg. Co., of Cambridge, Mass., shows the full line of Crest goods, including one of the new 3½ single cylinder Crestmobiles, the Crest duplex motor, carbureters, batteries, mufflers, induction coils and practically everything entering into the construction of a light gasoline carriage. The Crestmobile has the motor with its carbureter placed on the front axle. The clutch transmission device is placed under the body on the reaches. The power of the motor is carried to the transmission by a chain and another chain connects from the sprocket of the transmission to the compensating gear on the rear axle. The operator's seat is on the right side. On the dash is a rod connecting with a constant level carbureter for use when more gasoline is required, as in climbing hills.

U. S. Long Distance Automobile Co.

Three stanhopes and a delivery wagon formed the exhibit of the U. S. Long Distance Automobile Co., of Jersey City, and they attracted considerable attention, as the work of the company's wagon in the endurance contest demonstrated its value. The company is also building a 10 horsepower tonneau, a 10 horsepower runabout and a 20 horsepower tonneau, which were not completed in time for the show. The stanhopes are fitted with 7 horsepower single cylinders, having two speeds and reverse, starts from the seat and has a speed of 20 miles per hour. The 10 horsepower machine is equipped with two cylinders with a speed of 30 miles and the 20 horsepower vehicle with three cylinders located on the front axle and a speed of 40 miles per hour. The delivery wagon also carries the motor on the front axle giving a large carrying capacity of 1,000 pounds. The engines are designed with large bearings throughout and the water is circulated by a small centrifugal pump geared to the engine.

Mobile Co. of America

The Mobile Co. of America is showing a dos-a-dos, heavy surrey, light surrey, a heavy delivery wagon, a light delivery wagon, a wagonette, three stanhopes, a Goddard top, Victoria top and buggy top, a stanhope with solid back and a touring carriage with a dash which opens into a seat and will carry two to five people.

J. Randolph Walker is in charge, assisted by Harry Fosdick and a corps of salesmen. They call attention to the fact that the Mobile company was the first manufacturer to place on the market steam vehicles for heavy service. Mobile wagonettes are now in successful operation in a number of eastern cities, including New York, Buffalo, McKeesport, Pa., Passaic, N. J., and Hav-

THE NEW YORK SHOW.

erstraw, N. Y., while the company is now executing an order for eight twelve passenger wagonettes for use in the Santa Clara valley, California.

Automobile Co. of America

Four types of the Gasmobile are shown by the Automobile Co. of America, whose factory is located at Marion, N. J. The Gasmobile shows many improvements. The models exhibited are all of the pleasure vehicle type and each represents a distinctive model. The standard 9-horsepower, two passengers, is not unlike in general characteristics the types heretofore shown, maintaining in a general sense the essential features. In detail, however, many improvements and changes are apparent, adding considerably to the stability, simplicity and beauty of the carriage. Most noticeable, perhaps, are the changes in the methods of control and in the design of the body. The cars are equipped with or without rumble, hood or mudguards. This type is designed for the use of the ordinary tourist and is capable of running from 100 to 150 miles with one filling of gasoline and is capable of developing about 30 miles an hour as a maximum. The Gasmobile Special, 12 horsepower, two passengers, one of the most recent and successful types, is intended to fill that demand which has so rapidly grown, wherein higher speed and higher power is desired for touring. Not unlike the standard Gasmobile in general characteristics except that the wheel base is lengthened slightly to provide more absolute traction at high speed it might be said that the lines are identical to the standard model. In mechanical details, however, several changes are necessarily made to guarantee rigidity and stability. The wheel steering device is adopted to substitute the side steering and the arrangement for shifting gears is altered substantially. The transmission of power to the wheels is accomplished by the use of two sets of chains and sprockets, one each connecting the rear wheels with sprockets on each end of the shaft which extends from side to side through the carriage. The Gasmobile Special is equipped to attain a speed of 35 miles an hour and run 150 miles with one filling of gasoline.

Closely following the development of the automobile has come the natural inclination to higher speed, at the same time furnishing road going qualities not attained by the foreign carriages which are capable of high speed and still have not proven of sufficient stability to successfully negotiate the conditions with which they are confronted on our roads. In this type the general style and makeup of the accepted foreign carriages is adopted and the four cylinder upright engine in front gives the car a decidedly foreign tinge. In mechanical construction it closely resembles the better known foreign carriages and in tests made it has developed speed sufficient to

justify the conclusion that 40 to 50 miles an hour is not beyond possibilities. H. C. Gasmobile, 35 horsepower, represents the highest state of development. With extreme speed in view the car is constructed with a six cylinder engine to furnish power and is located in front similar to the foreign carriages. It is built with a tonneau body easily removable as well as the road-going front seat which can also be stripped for racing. While this carriage has never been tested to its extreme limit it is quite possible that 70 miles an hour is not beyond the possibilities. Within a short time the Automobile Co. of America intends to try this carriage with a view of demonstrating its qualities both on the road and track and make a demonstration which will quickly settle all doubts as to the superiority of American mechanical ingenuity and workmanship against the better known foreign products.

Steamobile Co. of America

The Steamobile Co. of America shows in its space, among other new features, a four passenger vehicle of singularly striking appearance. Its design is like that of an English coach having its rear seat



The Steamobile.

elevated four inches above that of the front seat. The unsightly tank at the rear is done away with and the outlines of the vehicle show no evidence of a "machine," a feature so noticeable in many of the four passenger wagons now on the market. In spite of the graceful lines of the carriage there are stored in well concealed tanks 30 gallons of water and 8 gallons of gasoline. It is propelled by an 8-horsepower engine and has a 19-inch boiler, thus being provided with facilities to make it a strong touring wagon of large radius. All the regular appointments of the standard Steamobile are retained, the conspicuous ones being two independent and pow-

THE NEW YORK SHOW.

erful brakes so constructed as to work with equal certainty either forward or backward, a very flexible frame, steam siphon for filling the tank, air pressure automatically supplied, gasoline and water tank gauges and burner which may be lighted anywhere without tools and which always remains ready for a start. A unique arrangement provides brilliant light on both the gauges and water glass for night running and all valves are so arranged that the operator in his seat has perfect control of every part of the machine. Another attractive part of the Steamobile display is a dos-a-dos seat which may readily be put on any of their standard two passenger vehicles. When in position four bolts hold the entire attachment in place, making an easily convertible carriage of extensive capacity. The seat is a very comfortable one and is an addition to the appearance of the automobile. When temporarily not in use the back and foot board may be neatly folded up. The Steamobile Company will have a number of carriages on the street for the use of anyone interested in their practical workings.

Lane Motor Vehicle Co.

A large electric sign showing the name Lane marks the exhibit of the Lane Motor Vehicle Co., of Poughkeepsie, N. Y. Three wagons—two surreys and a stanhope—are shown in a booth formed by a stained wood framework with a background of red. The vehicles have engines with crank shafts made from one solid piece of steel, including the sprocket, both cranks and all the eccentrics. The burner has a mixing tube which is more than twenty diameters in length, insuring a perfect mixture of gas and air before ignition. The individual

gas jets are arranged in straight rows with an air opening from beneath between each row. The wagons have a fuel capacity for 50 miles and the air pressure is kept up by the engine. The surrey has the water tank under the forward seat and the gasoline tank under the forward footboard. The single seat machine is built on graceful lines, weighs 950 pounds, has a 20-inch boiler and a wheel base of 70 inches. Geo. Lane and O. K. Raymond have charge of the exhibit.

Prescott Automobile Manufacturing Co.

A new concern in the trade, but one which, judging from the interest displayed in its exhibit, is destined to a bright future, is the Prescott Automobile Mfg. Co., of Passaic, N. J. This company shows a steam runabout of original design, with a gracefully curved dash box which opens up into an extra seat for two persons. The lighting device enables the operator to get up steam without an auxiliary torch. There is an independent pilot light, which enables the operator to shut off the main fire for an indefinite period.

The boiler has a superheating steam dome in the top. There are three methods of supplying water, the usual cross head pump, a steam injector and auxiliary hand water pump. The engine is made with a double cylinder, 2½-inch bore with 3½-inch stroke. The crank shaft with eccentrics is one solid forging. The cross heads have a wide bearing on the slide and can be adjusted to wear without difficulty. Steam and air gauges are on the same side of the carriage. An indicator which can be seen from the seat is also provided. Those seen at the exhibit are Frank F. Weston, W. H. Wells and P. M. Berry.

DISPLAY OF PARTS AND SUNDRIES

The gauge-glass electric lights and the automobile electric torches of the Electric Contract Co., of New York, will be found quite indispensable devices to the users of automobiles. The Light of Asia water gauge lamps not only are used as permanent fixtures on the vehicle, but may be used independently in examining out of the way parts of the machinery. They consist of a three-cell dry battery fitted with a miniature electric bulb. They are only for intermittent use for short periods and should last 3 months or more.

General Power Co.

The small oil electric generating plant on view at the booth of the General Power Co. does not belie its name of "multum in parvo"; for with this little engine and a barrel of gasoline for fuel the electric motor owner has a combined charging, lighting and power plant at his disposal and is

made independent of any local charging station.

Mechanical Tire Co.

The Mechanical Tire Co., of Westfield, Mass., seeks to do away with many of the objections to both solid and pneumatic tires by a hose pipe tube inclosing a series of springs. The foundation of the tire is the mechanically constructed core which takes the place of air in sustaining the load. This core is composed of several parts so arranged as to give the greatest possible strength, with the least possible wear and friction. It is entirely self-contained, relieving rubber cover of all strain of any kind. In the assembling of this core a continuous steel rim of U section is used, into which is placed a wood lining, which at intervals is drilled out the size of outside diameter of spring, and with a leather cushion insertion forms a perfect seat for

THE NEW YORK SHOW.

lower end of spring. The outer spring rim is made up of sections, one for each spring, connected by a hinge joint, allowing each section to act independently or together, as springs are depressed. In assembling tire, springs are placed in position, each one depressed by clamp until sufficient room for all springs is secured when outer rim or chain is placed in position, leather cushions being used on top of each spring, and last opened joint made up, when springs are confined between inner and outer rim, forming a self-contained core or load support, equal to compressed air in resiliency, but practically indestructible when covered by rubber sheath or cover, which is placed around core and held to same by bolts built into fabric of cover, same as a regular tire and rim holding, the sides of cover are then brought together on inside of rim and laced, a protection strip covering same. Tire is then forced onto wheel rim and held by bolts through rim.

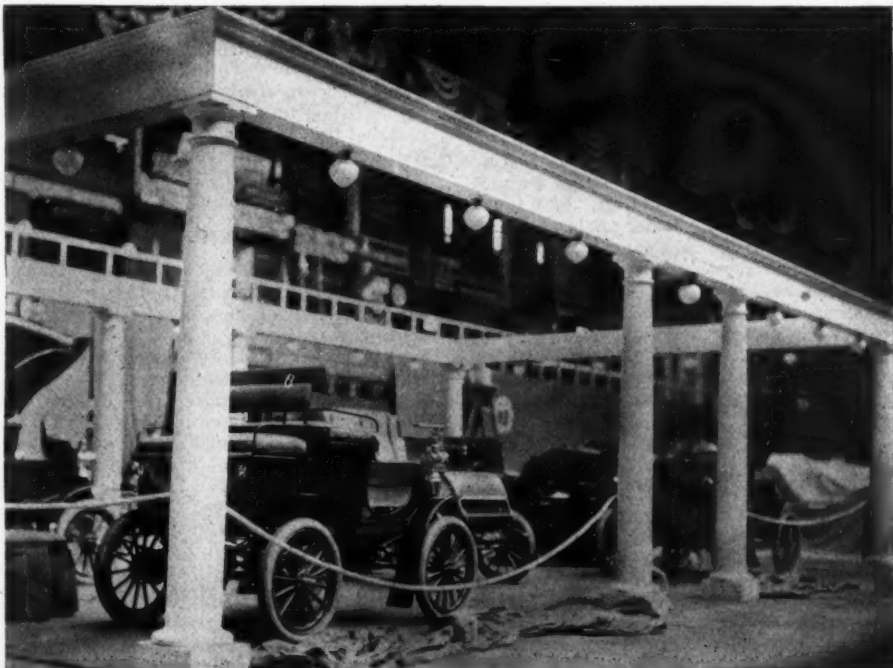
Diamond Rubber Co.

As was to be expected, a large and elaborately appointed booth served as headquarters for the Diamond Rubber Co. On a portiere hanging at the rear were displayed many pictures of well-known motor vehicles fitted with Diamond tires. All the well-known brands of solid, cushion and pneumatic tires manufactured by this company were present in sample and received effective exposition at the hands of a large

corps of salesmen. Diamond tires are seen on such well-known automobiles as the Winton, the Autocar, the Foster, the Century, the Locomobile and the Remington and this gives one an idea of their very general popularity.

Model Machine Co.

The Model Machine Co. has a big factory at Nos. 403 to 407 East 23d street, New York, and includes in its comprehensive output automobile accessories embracing radiators, brakes, condensers, engines, boilers, gasoline motors and castings and forgings. Among the features of this company's exhibit are a ball-bearing vehicle tire consisting of a pneumatic tube enclosing rubber balls, for which is claimed resiliency and non-puncturability; a Winans' automatic gasoline engine, which has a simple and durable water cooled cylinder; a steam engine in several sizes for special vehicle equipment, and tubular boilers containing from 370 to 956 cold drawn seamless copper tubes weighing complete from 100 to 450 pounds, each tested up to 900 pounds cold water pressure, the heat being produced by burning the vapor of ordinary gasoline. A Custead motor in action is a feature of the exhibit. The cylinder is cheese shaped, having a division wall in the center, which forms two compartments, in each of which operates an independent, semi-rotating shaft, carrying two blades. At the top and bottom of each of these



HANDSOME DISPLAY OF THE AUTOCAR CO.

THE NEW YORK SHOW.

compartments are permanent heads, projecting toward the center and forming a steam-tight joint between the semi-rotating shaft and said heads, as shown in cut. Each shaft carries a hanger, or crank, to which is connected the piston rod, which connects with the crank shaft, the piston hanger, or crank, traveling less than a half circle, while the crank shaft revolves. To operate, steam is taken at two opposite sides of the cylinder, and hence of the pistons of each compartment, at each half stroke, giving eight distinct impulses to the driving shaft at each revolution. The company also makes an electric runabout.

J. Holmes & Co.

The Salamanderine boiler shown by J. Holmes & Co., Newark, N. J., seeks to do away with all danger of burning. The exhibitors claim to have frequently evaporated every drop of water and immediately turned in cold water without injurious effect after raising steam again to 200 pounds pressure. An outside coiled water jacket permits heat from radiating to the outside covering. The feed water entering at the bottom of the coil is delivered at 212 degrees in the central standpipe. Dry steam is imparted and priming is prevented. The Salamanderine is complete and ready for connections, being provided with its own burner, smokestack, head and pilot light.

Gleason-Peters Air Pump Co.

Specially to be noted outside of the extensive and familiar line of hand, foot and stationary pumps included in the exhibit of the Gleason-Peters Air Pump Co., of New York, were a new gasoline storage tank and a new foot horn alarm. The tanks are of steel, copper-plated, with filler cap. They are made to order in all sizes and styles and can be furnished in four days from receipt of order. The foot horn, with pump attachment, may be fastened beneath the body of the vehicle, allowing the footboard to be readily removed. This foot horn overcomes the necessity of taking the hand off the steering gear to blow horn. The horns used are imported and made especially for this purpose. Pump can be purchased separately and readily attached to the horn by rubber tubing. The whole apparatus is very light, weighing but two pounds, and all parts are of bronze and rust proof.

Midgley Manufacturing Co.

The fact that the tubular steel wheels shown by the Midgley Mfg. Co., of Columbus, Ohio, are in use on so many of the leading makes of automobiles entitles them to be recognized as among the few standards in the automobile manufacturing industry. The report of E. A. Hitchcock, M. E., of Ohio State University, on his tests of the Midgley wheels is well worth consideration by motor vehicle manufac-

turers. The results of his exhaustive tests speak volumes for the advanced tubular wheel construction employed in the company's wheels, and those investigating this branch of automobile construction would do well to write the company for a copy of the professor's lengthy report, which was distributed at the show.

R. E. Dietz Co.

The R. E. Dietz Co., of New York, had its full line of headlights and sidelights to show, which on their merits and through liberal advertising have attained widespread use and popularity. Automobilists were especially attracted by the company's new headlight. It has a special back and a 7½-inch lens. Instead of being flat the oil pot has a drop. The reflector is of solid copper, silver-plated. No handsomer headlights were on view at the show. It is to be noted, by the way, that many of the vehicles on the recent Buffalo endurance run were equipped with Dietz lamps.

John Simmons Co.

In a red, electric-lighted pagoda were hung samples in frames, and on tables at the front was exhibited most effectively and attractively the extensive line of valves, fittings and supplies for steam vehicles made by the John Simmons Co., of New York. All were fine specimens of workmanship and many deserved special attention. Notable among them were long turn elbows, a special water gauge, through whose top the glass can be inserted; a throttle valve, whose stem had a spiral as well as rotary motion and would not stick under 300 pounds pressure, and a special frame of cast steel fittings showing great possibilities in the line of workmanship. Besides its New York factory in Center street this company has factories at Spuyten Duyvil, N. Y., Newark, N. J., and Charleston, W. Va.

New York Belting & Packing Co.

A gigantic painting of the female charioteer, a reproduction of the well-known advertisement of the Long Distance tires, made the space of the New York Belting & Packing Co. ornately conspicuous. The various types of tires were on hand to be shown; but their hundred per cent performance on the Buffalo endurance run, on which all the Long Distance tires got through without a puncture or break, seemed known to every one and spoke far more eloquently than could the tires themselves or Mr. Hayes and his fellow orators. It is further to be noted that no automobilist in the run using Long Distance tires thought it necessary to carry extra tires at all.

Dow Electric Co.

Probably more induction coils and batteries of the Dow Portable Electric Co., of New York and Boston, are in use on auto-

THE NEW YORK SHOW.

mobiles and motor cycles than of any other maker. The Dow induction coils have been very generally adopted by motor bicycle makers on account of their compactness and power. At the company's stand were exhibited several styles of compound batteries and combination coils, as well as spark plugs and pocket ampere meters.

Goodyear Tire Co.

A full line of its well-known puncture proof tires for heavy and light vehicles, mounted on nicked steel rims, was shown at the booth of the Goodyear Rubber & Tire Co., of Akron. Courteous and competent expositors were at hand ready to show the merits of the tires in respect to durability, resiliency, weight, non-puncturability, fabric and workmanship. Endless and regular solids and single tube and double tube pneumatics were on view, special stress being laid on the non-puncturable qualities of the latter.

Buffalo Gasoline Motor Co.

The gentleman in charge of the exhibit of the Buffalo Gasoline Motor Co. showed a MOTOR AGE man a check for \$500, being the first payment on a big order from a Pasadena, Cal., man. The deal was made on Friday night before the show opened and the check is claimed to be "first blood" for any salesman. The feature of the motors built by this company is a clever system of ignition. The points are made from a special composition claimed to be better than platinum. They are riveted on in warts, 3-16-inch diameter and the makers assert that they will not drop off or burn during explosion. The company's four-cylinder shifting spark motor is intended to entirely eliminate vibration. The shifting spark allows changing of speed from 200 to 1,500 revolutions per minute on the sizes up to and including 7 horsepower and from 200 to 1,000 revolutions per minute on sizes up to 12 horsepower. Other claims are a start in a quarter turn and largely reduced weight. The company also manufactures the patented Empire gearless transmissions, which have been in satisfactory use for 3 years.

Janney, Steinmetz & Co.

Cylinders, tanks and reservoirs for high pressure work and a varied assortment of boiler shells for automobiles made up the exhibit of Janney, Steinmetz & Co., of Philadelphia. Boiler shells for automobiles and high tension steam generators made of steel, seamless, cold-drawn, bright and smooth, capable of standing over 1,000 pounds pressure, were shown in various sizes with flat head drawn into the shell body and with flat faced loose head to match. The steel tanks exhibited were seamless throughout, heavily tinned inside and outside and tested to an hydraulic pressure of over 300 pounds per square inch. These tanks have been

very generally adopted for hydro-carbon reservoirs.

Hartford Rubber Works

The familiar electric sign of the Hartford Rubber Works Co. attracted the company's extensive clientele to its commodious booth in the gallery, where Louis Parker and other veterans of the trade were on hand to greet the old-timers of cycling and the newcomers in automobiling. The very general admission of the extra high quality of the Hartford product make these tires in very general demand by those makers, for whom nothing really of the best can come too high. All the brands of the Hartford and Dunlop tires were included in the samples shown.

Porter Battery Co.

The Porter Battery Co., of Chicago, beyond the necessary explanations of the working of its batteries, contents itself with pointing to the tests of its batteries, comparative and independent, to supply the arguments. Its battery has shown 76 ampere hours from a 13½-pound cell on a 4-hour discharge. This is claimed to be 35 per cent better than any other battery with equal life and means from 50 to 80 miles in one charge. Among the results obtained have been: A No. 7 battery, weight 470 pounds, ran 45 miles on one charge. One of its 840-pound batteries carried a 2,600-pound trap 76 miles in one charge. A run-about with a No. 7 battery weighing 470 pounds ran 52 miles over city streets and 62 miles on a cycle track on one charge. The Porter stand people set forth these claims and let their argument rest at that.

Badger Brass Manufacturing Co.

Dick Welles, he of the glad hand and the persuasive tongue, was, of course, the main feature of the Solar lamp booth. He sat amid a cluster of lights, head and side, and other lights, greater lights and lesser lights of olden cycle days clustered about him and swapped lies. Occasionally a customer managed to break in on him and was gathered into the fold in the same old way. The MOTOR AGE man just managed to get a word with him. "Our new French type Solar headlights are the thing this year, old man," quoth he. "Just look 'em over a minute. They're all right, aren't they?" They were. "I got tired tooting my own horn," he continued, "so we are making horns for the automobile boys to toot now. Don't forget to say a word about our generator lamps. Awfully busy. So long."

Consolidated Rubber Tire Co.

Kelly-Springfield tires were on view in the booth of the Consolidated Rubber Tire Co. The stand was hung on all sides with rich portiers and within were soft rugs and easy chairs, giving the effect of an oriental retreat. This company was a pio-

THE NEW YORK SHOW.

neer in automobile tire-making and has always preached the gospel of the solid tire from the beginning. A few sample tires served for reference and illustration of the business talks in progress in this luxurious and tempting haven of rest.

Charles E. Miller

The variety and extent of the exhibit of Charles E. Miller, of New York, manufacturer, jobber and exporter of automobile material, whose selected samples alone required three spaces to show, seemed to be limited only by the possible demand of a manufacturer and user of motor vehicles. A speedometer, claimed to be the only instrument of its kind, was shown. Miller also exhibited a trip odometer, which is practically two odometers side by side, one registering 10,000 miles and the other 100 miles. The latter can at any time be set at zero. A new umbrella canopy attachment intended specially for automobiles, something new in the way of a cushion and a dashboard watch-holder were among the novelties exhibited.

There are ten different steam engines and half as many boilers, three or four kinds of burners, including one for kerosene; Brown-Lipe equalizing gears; automobile hub with roller and ball bearings; running gears with roller bearings and ball bearings; generators and pilot lights; all kinds of fittings for steam automobiles; boiler shells, seamless steel tanks, seamless steel tubing, rims, spokes, sprockets, chains, and bells; steam, air and water pumps; several kinds of oil cups and lubricators and the proper kinds of oils and greases for same; nine or ten different gasoline motors with all the accessories to be used in connection with gasoline automobiles, including a dozen different kinds of carbureters, mixing valves, spark coils; the Apple dynamo; mufflers, batteries, spark plugs, etc., and a new nickel platinum plug from France; automobile repair kits and handy tools of all kinds for builders and owners of automobiles; French kid leather, coats, caps, trousers, gauntlets, goggles and automobile horns.

Baldwin Cycle Chain Co.

Baldwin chains and sprockets became standards in the days of the bicycle and their popularity and use have become every bit as general now in the automobile industry. A nicked ladder-like stand, with the various models of the chains serving as rings, showed conspicuously the entire line and made comparative demonstration easy to W. E. Gates, the head of the Baldwin Cycle Chain Co., who was in constant attendance. Included in the exhibit were samples of the full line of block and roller chains and of the patented roller chains of special design. Sprockets to fit all standard chains are kept in stock. Manufacturers would do well to send to the factory for one of the new catalogues. The

new Merkel motor was also on view at this stand.

Veeder Manufacturing Co.

Veeder odometers were displayed in a stand notable for its quiet elegance. A rosewood desk and chairs were set on soft rugs with rich crimson hangings at the rear, a very luxurious office for Mr. Post to talk with his customers and greet his veteran friends. The odometers were exploited effectively, the various bracket attachments being shown in one case and the little road measures in the other. Their operation and accuracy were exhibited by one of them being attached to a constantly revolving motor driven wheel.

B. F. Goodrich Co.

The success of the Goodrich clincher tires in the recent record trials, races and endurance run was naturally the uppermost topic in the double stand of the B. F. Goodrich Co., of Akron. Winton's racer, with which he took unto himself all the world's track records from 1 to 10 miles at Detroit on October 24 last was fitted with these tires. Five of the seven events won at Detroit on October 10 were won on Goodrich tires and forty-eight Goodrich tires came through the Buffalo endurance run. "What more need be said?" was, therefore, with reason, a frequent ergo to arguments at this stand.

Gray & Davis

Those in charge of the Gray & Davis stand declared that the policy of the firm had been during the past year rather to improve the lamp that has brought success than to seek other fields by trying to invent new ones. Still particular attention was drawn to its French headlight, now a popular endeavor with all American automobile lamp makers. The Gray & Davis lamp is light in weight with efficiency equal to the heavier ones. It is suitable for any large gasoline machine. The reflector is parabolic and the large flange in front combines to make a fine reflecting surface. It is not carried in stock and is only made to order. Some new side lights with oval reflectors are also shown. A water glass lighter of theirs will interest owners of steam vehicles.

Munger Vehicle Tire Co.

A trio of veterans, Munger, Dickinson and Dobler, were at the stand of the Munger Tire Co., of New Brunswick, N. J., well able to tell of the radical features of a tire that has triumphed amazingly in its short existence of one year. Its peculiar construction with a view to secure non-puncturability and to assure a ride home even in the face of extreme conditions has been exploited ably by its corps of salesmen and liberally in the trade journal pages, so that to-day no tire is better known and no tire

THE NEW YORK SHOW.

has attained a greater popularity in the same space of time. Munger shared with Dave Post and Dick Wells the glory of the largest personal following at the show. It must be remarked in this connection that Fred Castle was among the missing this time, being engaged in disposing of the Pacific slope allotment of the Twentieth Century Mfg. Co. goods.

Post & Lester

The Post & Lester Co. stand adjoined that of its Hartford brother concern, the Veeder Mfg. Co. As many of the leading articles as set forth in its 1902 catalogue, which every one interested in automobile materials and supplies should not fail to send for, as was possible were displayed. This catalogue, by the way, shows a jobbing business of enormous extent and gives one some idea of the extent of this branch of the automobile trade. Mr. Lester was in charge and was particularly proud of the company's display of automobile lamps.

Holland Auto Co.

Over sixty motors of various sizes, ranging from 1½ horsepower to 6 horsepower, are shown in the exhibit of the Holland Auto Co., of Jersey City, N. J. This company succeeded to the business of the Boisset Automobile Co. and General Manager C. P. Anemaet van Ferls says it is ready to supply motors and running gears fitted with 6 horsepower to 12 horsepower motors in any quantity. The workmanship of the Holland motors is as fine and smooth as anything seen in the show and mechanical experts who have examined them say that when the trade gets to know them they will undoubtedly enjoy a big sale. The background of the exhibit is formed by over fifty 1½-horsepower motors which are placed on the market especially for motor bicycles.

New Process Rawhide Co.

Gear cutting machines were to be seen in operation at the stand of the New Process Raw Hide Co., of Syracuse, for custom gear cutting and the making of metal gears to order are a specialty of this concern. The company has devoted over ten years to the improvement of raw hide gears and pinions and its products are known the world over for noiselessness, durability and cleanliness and require no lubricant or gear case.

Standard Welding Co.

Seamless steel tubing was used very effectively for decorative purposes in the railing that surrounded the booth of the Standard Welding Co., of Cleveland. The railing was of tubing and ornamental designs were worked in of rims entire and in section. Interesting discussions were in progress here on the subject of special electric welding of automobile parts or fittings. This tubing turned out by this company

is very largely used for running gears, reaches, axles, steering levers and all purposes.

American Ball Bearing Co.

An American shield with projecting flags very appropriately surmounted the gateway of the American Ball Bearing Co., a big revolving star shaped power wheel with vehicle wheels at the apexes of the star made an an effective exhibit of the bearings in operation. The parts of the bearings were at hand also for purposes of demonstration. The importance of the problem of construction with which the company deals insured a very general investigation of the exhibit by visiting automobile and part makers.

Joseph Dixon Crucible Co.

Of course "Bishop" Baird, the graphite enthusiast, was the principal feature and demonstrator of the exhibit of the Joseph Dixon Crucible Co., of Jersey City. He always had an interested audience to his continuous lecture on his favorite topic. Brushes and cans of flake graphite, especially applicable to automobile lubrication, were selected for exhibition from the extensive line of graphite products manufactured by the company. Motto signs reminded the visitor that "good lubricants are as necessary as wheels" and called attention to special products of the company of use to the new industry. The well known numbers 633, 635, 687 and 688 and pipe joint compound were among the samples shown.

Noera Manufacturing Co.

The Nuera Mfg. Co., of Waterbury, Conn., bought out the sundry department of Matthews & Willard and samples of this well known line were on view at its booth. The big Cyclops automatic lamp led the exhibit; but the well known Meteor and Duplex lamps and the Imperial oil lamps were also in evidence. The Motorliere is a new lamp taking the place of the old style tubular lantern. A large assortment of sundries applicable to motor vehicles were also shown, notable among which were four pumps of 350 pounds pressure each.

G & J Tire Co.

G. & J. tires received able exploitation at the booth of the G. & J. Tire Co., of Indianapolis. There were samples of the full line on hand; but they were not left to talk for themselves. There were eloquent missionaries to set forth the extreme resiliency of the tires through the highest class material used and their special construction leaving the greater part of the tire surface free and the visitor was impressed with the established truth that easy going and great ground covered is entirely dependent on this quality. The manner of attachment of the tire to the rim preventing

THE NEW YORK SHOW.

undue strain and the ease with which the outer rim could be removed and the air tube mended in case of puncture were not lost sight of either.

20th Century Manufacturing Co.

The Twentieth Century Manufacturing Co. had a small booth, which, however, bore all the earmarks of Mr. Cray's big displays at the great cycle shows. "We pitched our little tent here just to be in it with the boys for auld lang syne," said he. This company's big headlights are well fitted for automobile use and were taken up by the motor vehicle trade from its start. Two styles of auto oil lamps and two styles of auto gas lamps were shown, one of the latter having a hand lantern attachment. These lamps can be adjusted to any part of the vehicle, three styles of attachments being furnished.

Auto Supply Co.

A sample of one of its extensively used running gears was the most prominent feature of the exhibit of the Auto Supply Co., of New York. Originals of the 48 parts shown on the company's well known advertising hanger were also at hand convenient for Mr. Lurie's exploitation. This concern has a splendid and fully equipped plant and the high class of its workmanship has placed it in a comparatively short time in the front rank of automobile parts factories. The plant is now being driven to full capacity to fill some big orders from leading automobile makers.

Hydra Double Battery Co.

Prominent in the primary battery field are the batteries shown by the Hydra-Double Battery Co., of New York. They have been adopted by many prominent automobile and motor cycle companies. Every battery is guaranteed on the label not to lose over ten per cent of minimum labeled value in one year. The motorcycle sparking battery and searchlight outfit were also on view.

Automobile Blue Book Co.

Those complete and handy little manuals, the Automobile Blue Books, were not overlooked by the visiting motor vehicle owners. Everybody had heard of this veritable multum in parvo encyclopedia of maps, routes, storage and repair stations, hotels, speed ordinances and what not. A good chance was given many to examine them for the first time and few resisted the temptation to add the blue book to their touring outfit.

International Auto & Vehicle Tire Co.

A blackboard with constantly changing bulletins and crayon sketches by a well known newspaper cartoonist "fresh every hour" kept a crowd always around the stand of the International Automobile &

Vehicle Tire Co. These tires are practically pneumatic tires with a sponge rubber filling. Inside the sponge rubber there is another layer of canvas and then a rubber tube. The whole arrangement insuring nonpuncturability. In fact it is claimed that a heavy machine went 3,000 miles on deflated International tires. In the automobile run the percentage of these tires that finished after passing all controls was 83 1-3 per cent.

Shelby Steel Tube Co.

Everything about the decoration of the Shelby Steel Tube Co. stand had to do with steel, from the tubing of the railings to the letters of the electric sign, which set forth the use of the tubing for gears, flues and axles. Samples of the full lines were shown. Shelby seamless cold drawn tubing is now so widely used and known as to require little more than mere mention. The material is of the best. Its machines readily and cuts free and clean. Annealed tubing suitable for bending or forming into special shapes can also be had; also tubes, straight or tapered and bent to specifications. Extra heavy hot rolled tubes and cold drawn seamless square tubing are also included in the line.

Puncturenot Tire Co.

Though experiments have been going on for 3 years with a view to perfecting this idea of non-puncturable construction, the Puncturenot tires are publicly exhibited for the first time at this show. They consist of layers of rubber with a soft filling of fabric between and pneumatic aperture in the center. A tire which had been run for 7 months without a puncture was shown in proof of the tire's claims.

New Jersey Automobile Co.

The New Jersey Automobile Co., of Newark, showed a double acting brake which holds equally well backward and forward and does not bind and for which a patent has been applied. Those in charge of the stand said that during the past three months over 3,000 wheels had been fitted with this clever braking device.

Grant-Ferris Co.

The Howard motors, which have been in use for some time and stood the test of a thorough trial, were on view in great variety at the stand of their maker, the Grant-Ferris Co., of Troy, N. Y. The company makes both two and four cycle motors, the two-cycle in from 2 to 15 horsepower and the four-cycle from 4 horsepower upward. To those who are not familiar with the two-cycle engine the company's description is interesting. The Howard motors are built on two principles; first, as a two-cycle motor in small powers, ranging from 2 to 15 horsepower, for marine purposes. The principle of this type of

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ONLY when frictional rivet surface and tensile strength are large in proportion to the working load.



NO. 155 FOR LIGHT RUNABOUTS

Equip your machines with large chains and avoid trouble.

Diamond Chains have large nickel steel hard rivets, are accurate and highly finished.

The Automobile and Cycle Parts Co.

DIAMOND CHAIN FACTORY
INDIANAPOLIS, IND.

THE "Toledo"

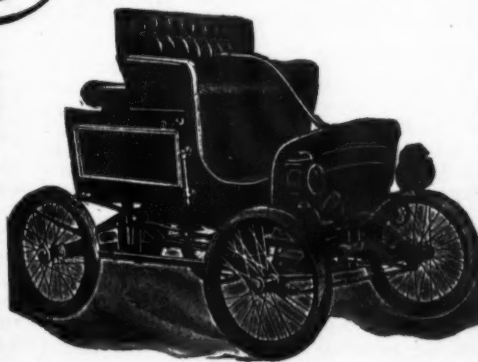
The following vehicles will be shown:

One Model A, Regular, - -	\$ 800.00
One Model B, with Victoria Top, - -	1000.00
One Model C, Surrey, - -	1600.00
One Model D, New Sloping Front, - -	1100.00

Three Model A, each different special finish.

The many special features possessed by Toledos will win for them many admirers at the big show. The Toledo boiler, engine and auxiliary pump will bear critical examination by every one interested in superior construction. Possessing a maximum water and fuel capacity as well as wide mileage radius and wonderful elasticity of power, the Toledo is easily the leader in the steam propelled type of vehicle. Our new Model D, showing a new style sloping front and the specially designed Toledo Surrey will awaken a desire to purchase in the hearts of every visitor. Send for Toledo booklet.—Sent free upon request.

exhibit at the second annual automobile show, Madison Square Garden, New York, will embrace a line of steam carriages never before equaled by any one manufacturer.



AMERICAN BICYCLE COMPANY
AUTOMOBILE DEPARTMENT

Toledo Factory, TOLEDO, OHIO.

New York Branch, 91 Fifth Avenue

THE NEW YORK SHOW.

motor is as follows: On the up stroke of the piston, a charge of air and gas in the proper proportion is drawn into the crank chamber of the engine, the down stroke compresses the gas slightly in the base. The rotating of the crank thoroughly mixes the vapor and air. When the piston is near the end of down stroke it uncovers an exhaust port allowing the previously exploded charge to escape. The inlet port is also uncovered at the end of the stroke, which allows the compressed gas in the crank chamber to pass through the open port where it is deflected to the upper part of the cylinder. The next up stroke of the piston compresses the explosive gas and when the piston is near the end of the up stroke the charge of gas is exploded by an electric spark. The resulting expansion of the gas drives the piston down. This operation is repeated through every revolution, requiring two strokes for an explosive impulse, and is therefore called a two-cycle motor. These motors are capable of being built to run in one or both directions and can be provided with reversing blade propellers, solid propellers keyed direct to shaft, or with a special mechanical reverse.

American Roller Bearing Co.

The American Roller Bearing Co., of Boston, Mass., exhibited wire and wood spoke wheels, fitted with roller bearings and single axles of all sizes for driving axles. When the MOTOR AGE man called at the stand on Monday the exhibit had not been fully arranged, as it had just been received entire from the Pan-American Exposition. This stand drew a crowd of students of the anti-friction question; for by reason of their ability to stand wear and tear roller bearings are undoubtedly increasing in vogue and probably share an equal popularity with ball bearings.

Miscellaneous Show Notes

A heavy safe-moving truck, an ambulance and a brougham form the exhibit of the Vehicle Equipment Co., of Brooklyn, N. Y. The truck has been sold to the Hill Safe Co., and is exhibited with one of that company's safes, which during the evenings is raised and lowered from one of the rafters of the building to show the working of the electric windlass, with which the vehicle is equipped.

J. Ransom Bridge, president of the Massachusetts Automobile Club, was at the show Saturday evening. Mr. Bridge stated that his organization had absorbed the New England Automobile Club, and the organization now numbered 120 members on its roll.

The Duryea Power Co., of Reading, Pa., shows the four-wheel vehicle which has been described in this column. Mr. Duryea has charge of his exhibit.

Among those attending to the Waverley exhibit are H. W. Jones, O. W. Elston, C.

R. Hough, W. J. Murtha, R. T. Hassler, O. B. Henderson, W. C. C. Hildebrand. C. L. Pepper, the manager of the department, is expected Wednesday.

Considerable favorable comment is heard over the action of the club in providing directories of exhibits free to visitors. These programs have no advertisements, and are gotten up in concise form with an attractive cover.

Adam Cook's Sons, of New York, exploited the advantages of Albany Grease as a lubricant for automobiles.

The Rose Mfg. Co., of Philadelphia, showed Never-Out lamps.

Coney Island Time Trials

New York, Nov. 4.—Arrangements for the big series of racing time trials on the Coney Island boulevard on Saturday of next week are about complete. Prominent among the entries already actually received are those of W. K. Vanderbilt, Jr., Henri Fournier, Foxhall P. Keene, Albert Champion, Kenneth A. Skinner, Louis Charley, Thomas B. DeWitt, C. J. Field and C. H. Tangeman. W. G. Ford, a civil engineer, will survey what is bound to be the historic mile. The parade preceding the time trials will be enormous, being open to all automobiles.

More Records for Champion

Newark, Nov. 4.—Albert Champion put up a new set of world's motor tricycle records at Vailsburg yesterday. His first mile was covered in 1:15, as against his own record of 1:12 2-5, but from 2 miles on to 10, inclusive, the figures were new records, up to 5 miles supplanting his own and beyond that setting new standards.

O'Halloran Bros. & Co., 184 Clerkenwell road, London, E. C., who refer to their New York bankers, Brown Bros. & Co., ask for lowest prices on motor and cycle accessories. These people are wholesalers, have correspondents in all parts of the world and make a specialty of handling American goods.

Stockholders of the Electric Vehicle Co. met last Tuesday and voted to reduce the number of directors from thirteen to nine, and elected H. M. Byllesby, George Chapman, G. H. Day, P. T. Dodge, T. W. Goodridge, A. A. Pope, A. L. River, I. L. Rice and F. C. Stevens to compose the board.

A new tire-making plant is to be established at Akron, O., that already greatest of all rubber towns in the world. Ground was bought last week and it is reported that as soon as the buildings can be erected there will be work for 100 men.

The capital of the Winton Motor Carriage Co. has been increased from \$200,000 to \$1,000,000.

A MILE INSIDE OF A MINUTE

Unofficially, but none the less positively, eye witnesses declare both Vanderbilt and Foxhall Keene have driven their machines a mile inside of a minute. The trials took place last Saturday, morning and afternoon, on a "private" road between Roslyn and Hempstead, L. I.,—private, that is, in the sense that there were few people there to see the sport. The trials were timed by the men who made them. Keene's times were taken by Vanderbilt and vice versa.

Vanderbilt used his 35-horsepower Mercedes and Keene his 60-horsepower Mors. The latter could not get quite its best speed out of his machine owing to the batteries failing to work as well as could be desired, but he nevertheless made the mile, according to the report, in 59 3-5s. Vanderbilt's time was 58 2-5s. Several trials were made in the morning and others in the afternoon. There will be no claim made for record, but the Coney Island trials a week from Saturday will enable the pair to show how much, if any, it is possible for them to get below a minute for the mile.

Duncan Curry, who was present at the trials, thus describes his experience:

"The writer, who has been a participant in all sorts of record-breaking trips on railroad trains, steam yachts and torpedo boats, had the good fortune to be a passenger on one of the fastest of Mr. Keene's trials. If you have ever ridden on a toboggan or fallen out of a balloon, you can form some conception of how it feels to be shot through the air within two feet of the ground at a mile a minute gait. On a railroad train, with a smooth track and perfect roadbed, one has little conception of the speed one is going. On a torpedo boat, outside of the jarring of the engine and vibration of the hull, one would think one was slipping over a sea of oil. On an automobile all this is changed. There is the wild rush of air which makes it difficult to breathe, and the roar of the wind which makes it impossible to hear. You go back half a mile from the starting line, for in automobiling for records a flying start is used, as in trotting races.

"Now we're off," says Mr. Keene, and

with a leap and a bound the gigantic space destroyer is off. With a cloth mask, huge dust goggles hiding his face and his hands gripping the steering wheel with grips of steel we fly down the yellow road to the starting line. It is like the flight of a lost soul. An atom at the side of the road a quarter of a mile ahead shows where the starting timer is, but before you realize what it is or are able to catch your breath, you are by.

"You glance behind to see if he has caught your time, but a cloud of dust like an approaching cyclone hides everything from view. A nudge from Mr. Keene, for it is impossible to hear even a college football yell with the roaring of the wind, apparently means to hold on tight. A second later, as we strike on a little 'thank you ma'am,' all four wheels seem to leave the ground, and you fly through the air for forty feet at a rate that would put M. Santos-Dumont's flying air ship out of business.

"As the machine lights you bound out of your seat as though you had sat on a red hot stove, and before you can gasp, speak or think you have swept by the finishing line. The power is shut off and the brakes are applied, but you are nearly a quarter of a mile beyond the finishing line before it is possible to stop.

"We turn and amble back to the starting line at a twenty-knot gait, where Mr. Vanderbilt is standing; and he says: 'Pretty good, Foxey, 0:59 3-5.' Mr. Keene starts in to make another trial, but, as before related, a broken nut prevented his continuing the trials, and later in the evening his machine was sent to New York to be exhibited in the automobile club's show."

Great Performance in Paris

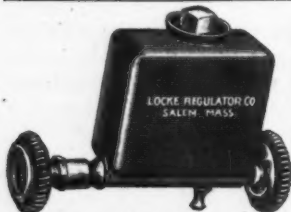
Osmont, the French motor cyclist, has beaten the mile and kilometer records and, for the first time, has placed the record for the former below a minute. The event occurred on Oct. 25, on the famous road of Archeres, near Paris. He first attacked the kilometer record, with flying start, and

A MILE INSIDE OF A MINUTE.

at the third attempt made the distance in 36 seconds, a speed of 100 kilometers per hour. The former record was 38 1-5 seconds, made by himself. He then tackled the mile and made it in 58 3-5 seconds, a fraction less than 100 kilometers per hour. Before the last performance rain had commenced to fall so that it is possible that Osmont would have done even better had all conditions been favorable.

Cincinnati Races, November 23

Late in the season as it may seem for automobile racing, we are to have more of it, and Fournier is to be seen for the first time west of Buffalo. Rutherford W. Cox, of the Automobile Club of Cincinnati, and now secretary of the newly-organized Ohio Automobile Association, attended the Providence races and secured the promise of Fournier to take part in a meeting at Oakley Park track, Cincinnati, on Saturday, Nov. 23. Fournier is to make an attempt to establish records up to 10 miles and will enter a 15-mile race against anyone who cares to compete with him. The entry blanks, which will furnish all details necessary, will be ready by the time this paper reaches its readers and may be obtained of Mr. Cox, whose address is 30 West 7th street.



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Locke Regulator Co.
Salem :: Mass.



IN THE New York-Buffalo endurance run it made a clean record, coming through without puncture, delay or annoyance. All round the circuit it leads on track and road.

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25 Park Place, NEW YORK.

We are open to receive bottom prices for Cycle and Motor Accessories with Component Parts.

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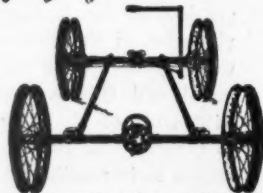
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MANUFACTURERS
FOR BUILDERS
AUTOMOBILE PARTS.
ST. LOUIS. U.S.A.

ADVERTISEMENTS.

What is **AUTOMOBILISM?**

All who are interested in that question should consult the

"Motor-Car World"

which each month reviews the progress of the new Locomotion throughout the World. Published at 186 Fleet Street, London, England. Annual Subscription, post free to the United States, one dollar.

MISCELLANEOUS

Advertisements under this head 5 cents per word first insertion; 3 cents per word each insertion thereafter. Cash with order. Express orders, postoffice orders or stamps received.

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AGENT WANTED to purchase second-hand bicycles. Address **INTERNATIONAL BICYCLE CO.**, Shanghai, China. 1

WANTED—Position with automobile concern. Experienced. Address, **MECHANIC**, care of **MOTOR AGE**, 150 Nassau St., New York. 1

POSITION WANTED—With automobile house in New York; handy with tools; experienced "road" and retail salesman; moderate pay. Address **H. H.**, care **MOTOR AGE**. 1

BICYCLE TRUNKS WANTED—Good second-hand double bicycle trunks; must be in good order; state length, quality and lowest price. Address **TRUNKS**, **CYCLE AGE**, Monon Bldg., Chicago. 1

FOR SALE

FOR SALE—Second-Hand Steam, Gasoline, Electric vehicles. Guaranteed. **A. L. DYKE**, Linmar bldg., St. Louis, Mo.

FOR SALE—In good condition, two second-hand Bicycle Trunks, double and single style. **HOUSE & HERRMANN**, Wheeling, W. Va.

FOR SALE—The Automobile Storage and Repair Co., 57 West 68th St., New York, have new and second-hand steam, gasoline, and electric carriages constantly on hand and have always some special bargains.

BICYCLE MOTORS—We have on hand five first-class 1 1/4 horsepower bicycle motors Aluminum crank case, phosphor bronze bearings and highest quality of workmanship. Will be sold at a sacrifice, either singly or as a lot. **C. M.**, care **MOTOR AGE**.

FOR SALE—2 Mobiles, Victoria top, latest patterns, 300 and 500 miles service, good as new not a scratch, \$500 and \$600; 2 Milwaukee steam, top, etc., latest models, \$550; also Milwaukee surrey, 280 miles, not a scratch, \$750; 1 1901 Winton, perfect order, \$800; 1 Knox Runabout, A1 shape, \$500; 20 other bargains. **FISHER CYCLE AND AUTOMOBILE CO.**, Indianapolis, Ind. 3

D—



Dyke's Float Feed Carbureter

No. 2 and No. 3 suitable for engines from 1 to 12 and 12 to 40 h. p. We now make them of **BRASS OR ALUMINOID**.
A. L. DYKE, Linmar Bldg. St. Louis, Mo.
New York Representative, **Chas. E. Miller**, 97 Rensselaer St.

BICYCLE DEALERS



The winter season is approaching. We can help you to make it profitable. We have a good proposition to make. The article we have is a good one.

The "Nulite" Vapor Gas Lamp

is no experiment. Beats any light on earth except the sun, and is almost as cheap. All styles for Home, Store or Street. An unlimited field. Write for catalogue and particulars.

CHICAGO SOLAR LIGHT CO., Dept. 21, Chicago, Ill.

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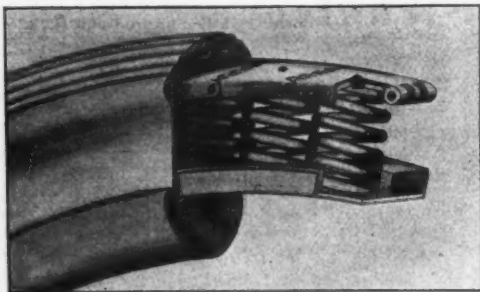
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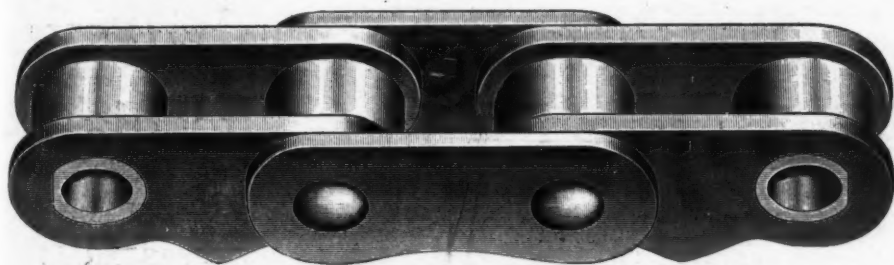
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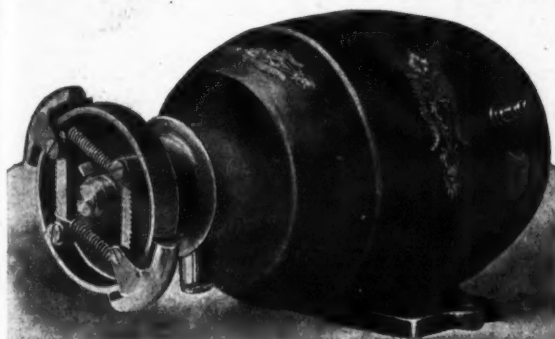
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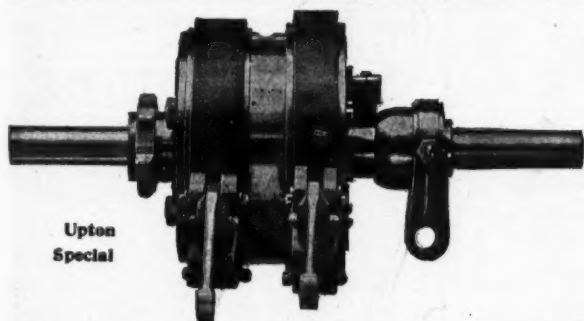
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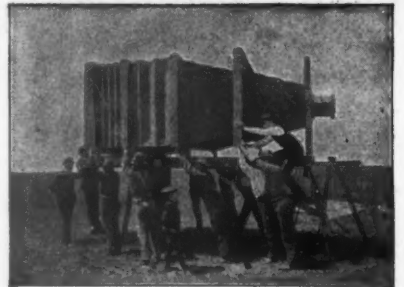
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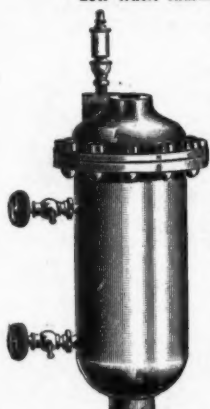
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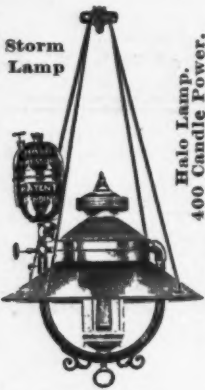
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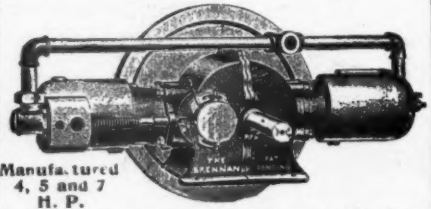
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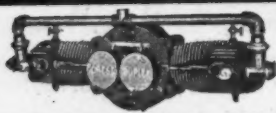
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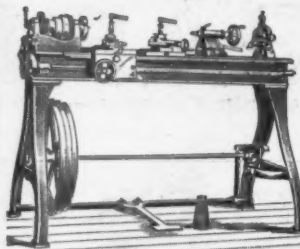
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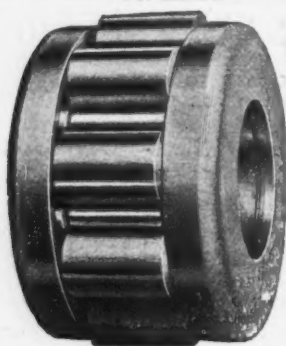


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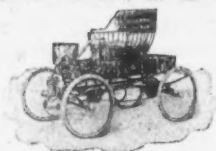
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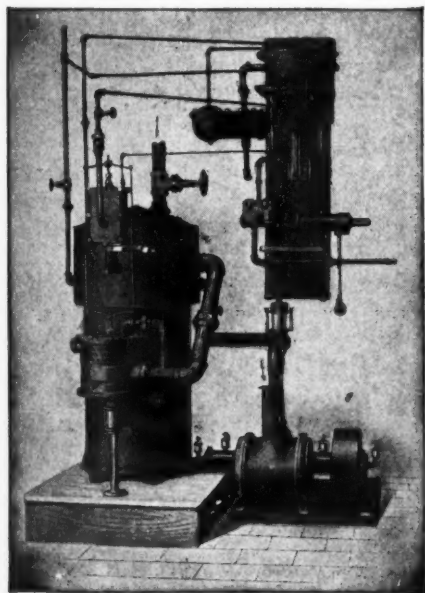
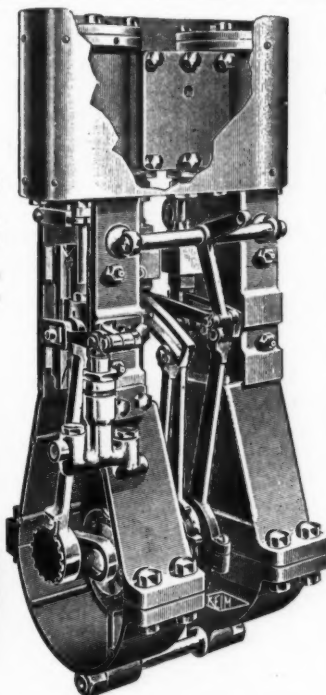
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